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A cost-benefit and system-analysis approach was utilized in an effort to study the quality of education in the State of Kentucky. This first report of that 2-year study relates: background information problems of measuring quality; methodology employed; rankings of the 197 school districts; and the input, output, and process variables. Two different rankings are presented, one on the basis of all 19 variables examined, and the other on the basis of the 5 output variables considered. Conclusions and interpretations are drawn from profile analyses of each of the 197 school districts. The appendix contains a literature survey of other studies pertaining to quality education in Kentucky. A list of references concludes the document. (SW)

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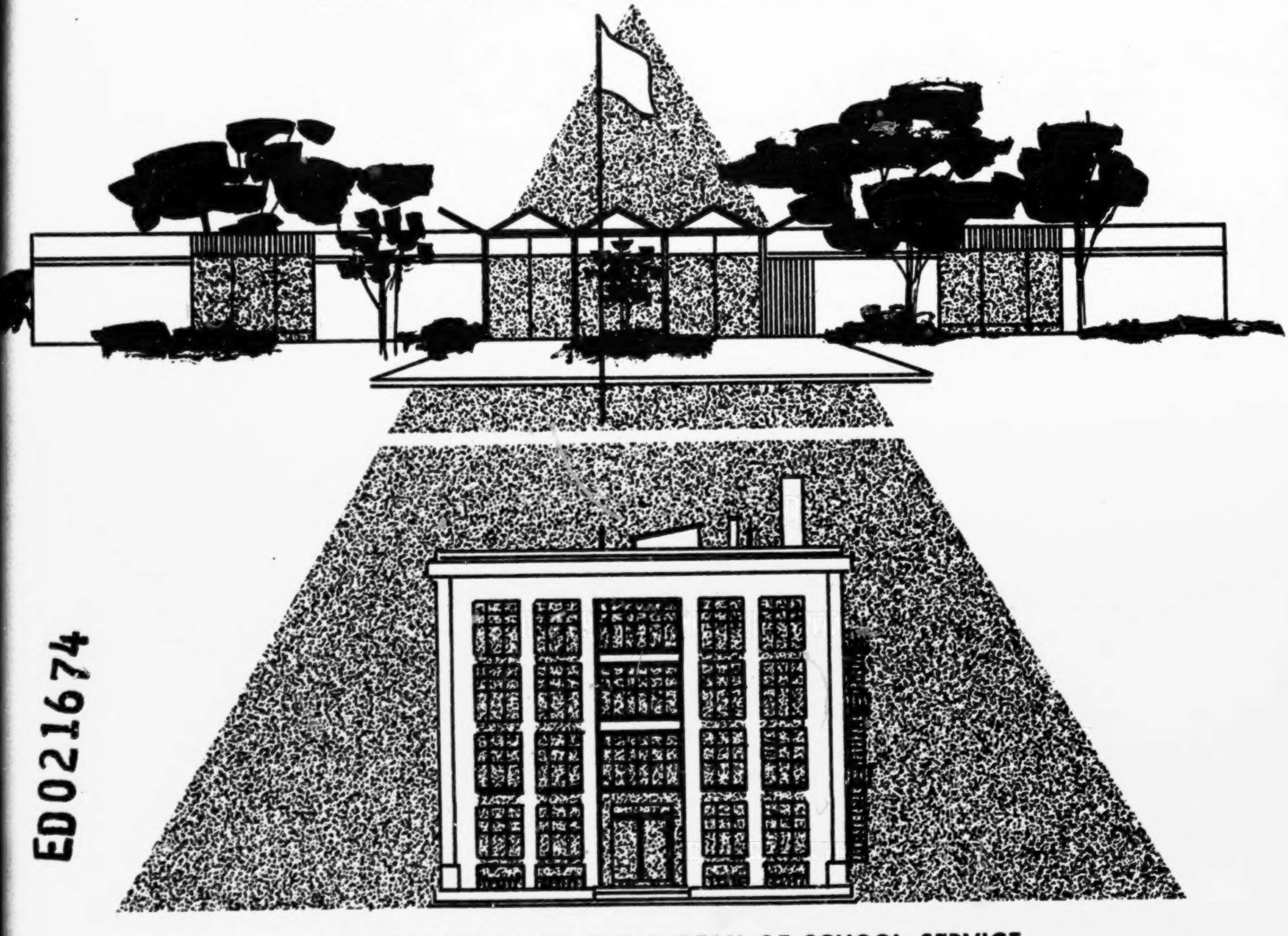
Quality Rankings Of Kentucky School Districts

by William J. Diamond • Charles F. Martin, Sr. • Richard I. Miller



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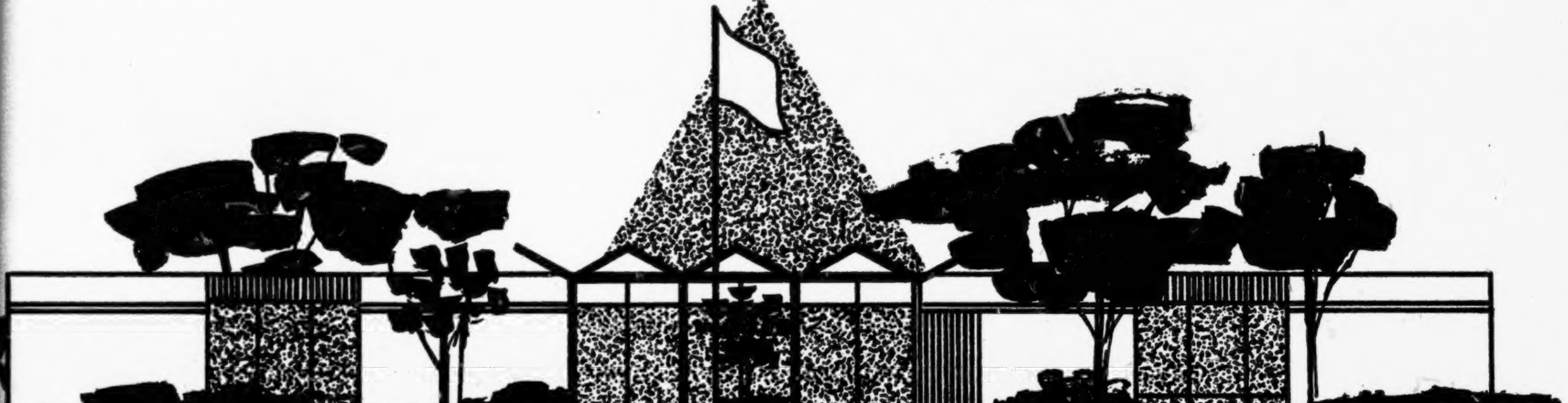

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Quality Rankings of Kentucky School Districts

INTRODUCTION

This is the first report of a two-year study of the quality of education in the State of Kentucky. Believing that the "calibrated eyeball" approach was too gross, and sole reliance upon test scores was too confining, the study team utilized a cost-benefit and system-analysis approach.

These findings are the result of an initial inquiry into the important question: How can one determine whether a school district is receiving a reasonably effective educational return for the dollars spent?

The results of the study should be of aid to the Kentucky Legislature and State Department of Education in identifying those districts that need attention and thus pinpoint what help is needed. Furthermore, when used with the information in the system-analysis study, * it will make it possible to calculate how much improvement can be expected from the various alternatives proposed.

We believe our statewide study to be only a first step. In five years considerably more information and more effective procedures should be available. We are pleased to be as far along as we are, but dissatisfied in terms of how much remains to be done.

Part of our satisfaction as the study developed resulted from working with many individuals involved, chief among whom are: Arthur Cotterill, Bureau of School Service, University of Kentucky; John Graham, Major, U. S. Army Reserve Corps; Charles Haggard, Assistant Professor of Mathematics, Transylvania College; George Mallow, Psychologist, International Business Machines, Lexington; Buford Reisner, Superintendent of Bath County Schools, Owingsville, Kentucky, and John Terry Ginn, graduate student, who prepared the profiles.

We are grateful to the Staff of the University of Kentucky Computer Center for their assistance, to the Kentucky Research Foundation for a small initial grant, and to the International Business Machines Corporation, Lexington for use of their computer facilities and for making available Mr. Diamond's special skills in design of experiments and statistical analysis.

--Charles F. Martin, Sr.
Richard I. Miller

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*A second volume of this study will present procedures for calculating improvements.

CHAPTER I

BACKGROUND

Quality public education has never been more vigorously espoused and sought after than at present. The increasing complexities of occupational developments, decreasing numbers of desirable positions available without additional education requisites, greater knowledge required for effective living, and a continuing international challenge combine to place education second only to military defense in national expenditures.

Education accounts for a major portion of the ever-climbing local and state taxes. While most communities have voted increases regularly, citizens are asking with growing persistence about relationships between cost of education and its effectiveness. In other words, they want to know whether they are receiving a reasonable return in terms of good education for tax dollars spent.

Educators are ambivalent about applying cost-benefit procedures to education, and this view is justified if such measures are applied without adequate comprehension of the present weaknesses inherent in this approach. For example, present evaluative procedures for measuring academic achievement are inadequate and measurement devices are not available to evaluate some of the more intangible objectives of education.

Recognizing these and other limitations of cost-benefit studies, one is still faced with the problem of formulating procedures for determining whether a school system is actually receiving educational returns commensurate with educational expenditures. This study is an effort in this direction.

Problems of Measuring Quality

It would seem that any school or school district or state school system should be able to determine the relative quality of its education. Furthermore, it would seem that an inferior school could upgrade itself by studying the attributes of a good school and making appropriate changes.

Additional consideration, however, and a review of the literature on quality education reveal the problem's complexity and the impossibility of finding any simple method of attaining quality education. In fact, most quality education studies are of little direct value to federal, state, or local school officials interested in upgrading school quality for five reasons:

1. The samples used in most national and state studies of quality education have consisted of regional school systems or selected districts within a state and therefore have been of limited scale. Emphasis has generally been placed on the individual student or local school system.

2. School systems in some states have been studied exhaustively, whereas almost nothing has been done with others; this also applies to individual schools within districts.

3. Measurement of quality in education varies from study to study. Some investigators have oversimplified and used a single criterion of quality such as holding power, truancy rate, or a test score. Some have simplified even further by equating quality with expenditure. Others have gone to the opposite extreme and measured quality by a complicated array of measurements. It is not possible to compare for example, one school district in Kentucky where a study was made with quality defined as lack of truancy, with another school district in Kentucky where a study used pupil-teacher ratio, or some other variable as the measurement of quality.

4. The purposes of quality education studies are varied. One study might be designed to probe for changes to be made in a state department of education while another study might be directed toward new school legislation or a district's operational procedure. Studies made with one objective in mind are of value to those schools in that study and should not

be compared with data on another sample of schools studied with some other objective in mind.

5. Many cause-and-effect relationships can exist between various measures of quality education and the socioeconomic community factors. But most studies use only a few causative factors, most of which differ from those used in other studies which might be equivalent to each other in quality factors. Too many studies try to explain quality education in terms of some single cause--a highly questionable effort in view of present-day educational and social complexities.

In addition to the paucity of usable studies on quality education, other circumstances complicate the local picture. Notable among these are the increasing costs of facilities, staff and services, increasing crime and delinquency, and racial problems. In special local areas the problem is still further accentuated by high levels of unemployment, numerous welfare recipients, and lack of industry.

What has been stated in general applies to Kentucky specifically. A few studies have been conducted on quality education in Kentucky; none have been extensive in scope. (See Appendix A for a summary of these studies.) Yet Kentucky would appear to need such studies since most national evaluations of per pupil expenditures, as well as educational achievement, rank Kentucky very near the bottom.

One must be careful, however, when making interpretations from these studies because there is no valid study which indicates how to correct the situation in a systematic and economical manner. It was to assist in ameliorating this deficiency that the Kentucky Quality Education Study was initiated.

CHAPTER II

METHODOLOGY

The Kentucky Quality Education Study is a system analysis of 197 Kentucky public school districts based on their socio-economic and educational characteristics. Using multiple regression analysis and computer technology, these studies examine relationships that exist in Kentucky among (a) community socio-economic factors, (b) instructional factors, and (c) several measures of student achievement.

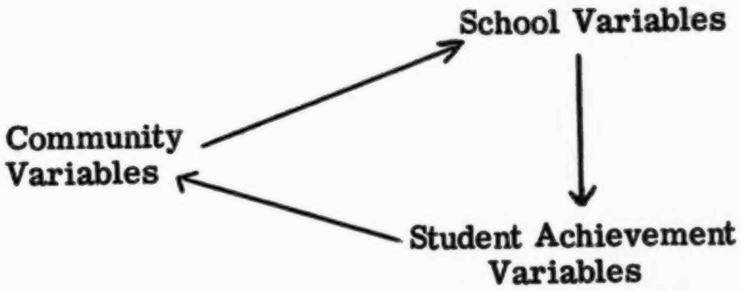
Data for the studies were obtained from various Kentucky State Department of Education publications, from U. S. Census Reports, and from other sources. The data represent the 1964-65 school year.

The major purpose of this initial presentation is to enable the administrators and school board members of a Kentucky school district to determine how their district ranks in comparison with the other 196 districts of Kentucky pertinent to quality education. A profile of each district is presented. (By referring to the second volume--the total system study--it may be determined which socio-economic or school factors might be modified to improve the quality at minimum cost.)

Input, Process, and Output Variables

Over 300 factors have been identified in various studies as possibly influencing quality education. These factors have been categorized by most educational researchers into three groups: community variables, school variables, and student variables. These groups can also be logically titled *input* variables, *process* variables, and *output* variables.

For purposes of this study, the community variables are considered antecedent to school variables and these, in turn, precede student achievement variables. In reality, however, it is more of a closed circuit in that the present values of community variables resulted from student variables of the last generation and future values of community variables will be a function of present values of student variables.



Student achievement and holding power variables are used in this study as measures of quality education. These yardsticks are in contrast to some which presume that quality education automatically flows from excellent school facilities. While some positive relationships usually exist, it is possible to have quality education with poor facilities or poor education with excellent facilities.

The three criteria used for selection of the 19 factors in this study are: (a) their prevalence and reliability in other studies of quality education, (b) their applicability to Kentucky schools based upon the state's economic, social, geographic, and educational conditions, and (c) the availability of data.

Community Variables

The Kentucky Quality Education Study uses two factors that provide excellent indices of the educational support level of the community. They are:

1. *Median Grade Attainment* is defined by the U. S. Census Bureau as the median level of schooling achieved for all citizens of a census unit who are 25 years old or older. The state's median grade level is 8.4; the lowest district median grade level is 6.7, and the highest district median grade level is 12.1. The range between the state's highest and lowest district is 5.4.

2. *Median Family Income** is defined by the U. S. Census Bureau as the me-

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*For reasons of uniformity, availability, and as a basis for comparison, the county school district is used as the basic income unit. Some independent districts have an estimated median family income of $12,000 or more, while the state's highest ranked county district has a median family income of only $5,932. This contradiction would also hold true in other instances involving first, second, and third class cities.

dian income earned by all persons 14 years old or older of a census unit who reported income either individually or as members of families. The state's median family income level is $3, 320; the lowest median family income level is $1, 324, and the state's highest family income level is $5, 932. The range between the state's highest and lowest district is $4, 608.

In the total system study it was found, not unexpectedly, that these two variables are highly correlated. On the average, the higher the educational level of the community, the higher the family income. Both variables are included, however, since it was shown that each one influences different parts of the school system and student achievement.

Process Variables

The process or educational system variables included in the study are:

3. Per Pupil Expenditure is the amount of money spent per year, per pupil for all current expenses--including administration, instruction, attendance and health services, pupil transportation, operation and maintenance of plants, fixed charges, community services, debt services, outgoing transfers and refunds and capital outlays. The state's mean per pupil expenditure is $273. 71; the lowest district per pupil expenditure is $214. 30, and the highest district per pupil expenditure is $436. 73. The range between the state's highest and lowest district is $222. 43.

(Per pupil expenditure might also be considered as a community variable since it is the amount of money raised for the school system by the community plus state and federal aid.)

4. Elementary Teacher's Salary is calculated by adding all the elementary teachers' salaries in a district and dividing by the number of teachers. The state's average elementary teacher's salary is $4, 409; the lowest district elementary teacher's salary is $3, 553, and the highest district elementary teacher's salary is $6, 435. The range between the highest and lowest district is $2, 882.

5. Secondary Teacher's Salary is calculated by summing all the secondary teachers' salaries in a district and dividing by the number of teachers. The state's average secondary teacher's salary is $4,789; the lowest district secondary teacher's salary is $4, 264, and the highest district secondary teacher's salary is $6, 580. The range between the state's highest and lowest district is $2, 316.

6. Percent Rank I Elementary Teachers is the percent of elementary teachers in a district who have a master's degree and at least 30 additional hours. (Rank II and III teachers were not used in the study.) The average number of Rank I elementary teachers per district is 1. 50 percent. Fifty percent of Kentucky school districts have no Rank I elementary teachers; the highest district's percentage of elementary teachers in Rank I is 14. 3. The range between the highest and lowest district is 14. 3 percent.

7. Percent Rank IV Elementary Teachers is the percent of elementary teachers in a district who do not have a baccalaureate degree and are classified as "emergency teachers" in Kentucky. The state's mean percentage of Rank IV elementary teachers is 12. 46. The lowest district percentage is zero--41 districts have no Rank IV elementary teachers, and the highest percentage of Rank IV elementary teachers is 50. Of a total of 197 Kentucky school districts, 156 have some Rank IV elementary teachers.

8. Percent Rank I Secondary Teachers is the percent of secondary teachers in a district who have a master's degree and at least 30 additional hours. (Rank II and III teachers were not used in the study.) The state's mean percentage of Rank I secondary teachers is 4. 43; 44 districts in the state have no Rank I secondary teachers, and the highest percentage of Rank I teachers in the state is 21. 1. The range between the highest and lowest district is 21. 1 percent.

9. Percent Rank IV Secondary Teachers is the percent of secondary teachers in a district who do not have a baccalaureate degree and are classified as "emergency teachers" in Kentucky. The state's average number of Rank IV secondary teachers per district is 1.13 percent; 141 state school districts have no Rank IV secondary teachers, and the highest percentage of Rank IV secondary teachers is 30. Fifty-six state school districts out of 197 have some Rank IV secondary teachers.

10. Elementary Library Expenditure is the amount spent per pupil per year for library books, equipment and related materials. The state's mean elementary library expenditure per pupil is $1.39; the lowest district elementary library expenditure is $0.15, and the highest district elementary expenditure is $4.00. The range between the highest and lowest district is $3.85.

11. Secondary Library Expenditure is the amount spent per pupil per year for library books, equipment and related materials. The state's mean secondary library expenditure per pupil in Kentucky is $1.99; the lowest secondary library expenditure is $0.50, and the highest secondary library expenditure in the state is $9.35. The range between the lowest and highest district secondary expenditure is $8.85.

12. Enrichment Expenditure is the amount spent per pupil per year for audiovisual materials, tests, supplementary books, teaching supplies, and instructional travel. The state's mean enrichment expenditure is $5.26 per pupil; the lowest district enrichment expenditure is $0.84, and the highest district enrichment expenditure is $15.90. The range between the highest and lowest district is $15.06.

13. Teacher/Pupil Ratio is the average number of pupils per class whom an individual teacher will instruct daily. The state's mean average number of pupils per class is 25.8; the lowest district average number of pupils per class is 20.3, and the highest district average number of pupils per class is 33.4. The range between lowest and highest district is 13.1.

14. Percentage Attendance is the average daily attendance (ADA) of the combined enrollment of a given school district for the period of one school year. The state's mean attendance is 94.55 percent; the lowest district attendance is 88.88 percent, and the highest district attendance is 98.07 percent. The range between the highest and lowest district is 9.19 percent.

Output Variables

Five output measures were used:

15. Percent of Ninth Graders Who Graduate from Secondary School is a measure of the holding power of the school district. The state's mean percent of ninth graders who graduate is 64.54; the lowest district percent of ninth graders who graduate is 41.60, and the highest district percent of ninth graders who graduate is 96.70. The range between the highest and lowest district is 55.10 percent.

16. Percent of High School Graduates Who Enter College is also a measure of holding power, but in addition reflects motivation and other factors. Influential also are such factors as parental income and the admission policies of public institutions of higher learning in Kentucky. The state's mean of high school graduates entering college is 39.85 percent; the lowest district percentage of high school graduates entering college is 5.0, and the highest district percent of high school graduates entering college is 81.00. The range between the highest and lowest district is 75.91 percent.

17. Percent of Ninth Graders Who Enter College is a third criterion of holding power considered more valid than Variable 16 in that it is not influenced by in- and out-migration of students in the districts but refers to the original enrollment. The state's mean percent of ninth graders entering col-

lege is 26.28; the lowest district percent of ninth graders entering college is 3.13, and the highest district percent of ninth graders entering college is 66.45. The range between the highest and lowest districts is 63.32 percent.

18. College Qualification Test (CQT) is a series of achievement tests developed by the Psychological Corporation to evaluate (1) verbal ability, (2) numerical ability, (3) social studies, and (4) the sciences. These tests are administered to Kentucky secondary schools on a voluntary basis under the direction and supervision of the University of Kentucky Testing Service. The tests are scored via Kentucky norms, with national norms available for comparison, Approximately 70 percent of Kentucky school districts give the CQT. The state's mean CQT score is 74.28 percent; the lowest district percentile is 13.0, and the highest district percentile is 99.99. The range between highest and lowest district is 86.00 percent.

19. Armed Forces Qualification Tests (AFQT) is a national test administered to all young men called up for examination by the local draft boards under the Selective Service Act. It consists of four categories of questions: (1) arithmetic reasoning, (2) verbal ability, (3) pattern analysis and interpretation, (4) mechanical aptitude. In the Kentucky study, the percentage of students in each district who fail the test is recorded, but on the profiles the signs are reversed so that the highest district with the lowest percentage of rejectees has the highest positive score. The state's mean percent of rejectees is 67.49, the lowest district percent of rejectees is 14.68, and the highest district percent of rejectees is 68.21. The range between the highest and lowest district percentages of rejectees is 53.53.

Calculating Data for Profiles

The data for the profiles were obtained as follows on an IBM 360/50: For each variable, the mean was calculated by adding the value of the variable for each district and dividing by the number of districts. The standard deviation for each variable was calculated by the formula $\sigma = \sqrt{\frac{\Sigma (x-\bar{x})^2}{n}}$. Where $\bar{x}$ is the mean, x is each individual value and n is the number of districts.

The Z score for each variable for each district was then computed from the following:

$$Z = \frac{x - \bar{x}}{\sigma}.$$

The Z score is nothing more than the number of standard deviations the value for any district is above or below the mean. From standard tables of the normal distributions, these Z scores were converted to the percentage of the entire population for plotting on the profile sheets.

The following table compares representative Z scores with percentages of the population.

Z Score	Percent Population
+3.0	99.87
+2.0	97.72
+1.0	84.13
.5	69.15
0.0	50.00
- .5	30.85
-1.0	15.87
-2.0	2.28
-3.0	.13

As an example, using the state's mean family income of \$3320 and the standard deviation of \$500, the Z score of a district with a mean family income of \$4000 would be:

$$Z \text{ score} = \frac{4000 - 3320}{500} = 1.35,$$

which would be equivalent to 91.15 percent. Therefore as measured by wealth, this district would be in the upper 8.85 percent of Kentucky districts.

It should be noted that a high percentage figure for some variables would be deleterious to quality education. (The percentage of Rank IV teachers is an example.) In these cases the Z score was computed as above and then the sign was changed. Thus, if a district had a high percentage of such teachers the initially computed Z score would be positive, but before plotting the data the sign would be changed to negative. Therefore, on the profiles a point above the mean line always signifies a better than average score (ranking) with regard to that particular variable.

Calculating Data for Rankings

The ranking data were also obtained on the IBM 360/50 using the Z score data. For each district, the Z scores for all variables were added together and divided by the number of variables. This computed value was therefore the average Z score for the district over all 19 variables. The first ranked district (Ft. Thomas) was therefore the district with the highest average Z score.

In the case of the quality variables, the same procedure was used with the exception that only the Z scores of the five quality variables were added together and the divisor for most cases was five.

It will be noted that in a few districts there were missing data. In these cases the average Z score was computed on the basis of the numbers of data actually present. In effect this procedure assigned the mean Z score of the given district equal to all missing values.

It should also be noted that equal weight was given to each variable in these rankings. In the case of the 19-variable ranking, each input variable was given equal weight with regard to every other input variable and also to each variable in the process or output category. In the case of the 5-variable quality ranking, all quality variables were considered to be of equal merit.

It is apparent that for a ranking procedure to be valid all the data must be placed on some common basis. That is one of the purposes served by first computing Z scores. For example, it would be meaningless to average the actual values of medium family income and pupil-teacher ratio since the magnitude of the former values would completely overwhelm the latter. Furthermore, the two items are in different units. In the case of Z scores, however, an average between these variables is valid since the values are in the same order of magnitude and in the same units.

CHAPTER III

RANKINGS

Two sets of rankings for each Kentucky public school district were obtained. The first rankings are based on all 19 factors used in the study while the second set of rankings include only the five output factors. A description and explanation of the procedures and statistical analyses are included in the previous chapter on methodology.

Rankings of Public School Districts on 19 Variables

This ranking reveals that 34 of the 50 top ranked school districts in the state's upper quarter are independent districts. Furthermore, seven of the 16 county districts ranked in the top quarter are either part of large metropolitan areas or adjacent to them so that close communication, business and commercial relationships are readily maintained. Adjoining school districts in these areas are motivated through competition, example, public expectation, and pressures to provide educational opportunities equivalent to those maintained by their neighbors.

Of the 50 school districts ranked in the state's lowest quarter, 45 are county districts and only 5 are independent districts.

Geographically, the majority of school districts ranked in the top 50 are located in the Western Kentucky area, the Bluegrass, Northern Kentucky, and the general Louisville area. School districts ranking in the lower quarter are located in economically deprived sections, primarily in Eastern Kentucky.

No definite pattern emerged with respect to district size and quality ranking. Independent districts ranking in the top 50 vary in size from small to large, and this pattern is evident also for county districts ranked in the top quarter. However, districts with small school populations that ranked in the top quarter generally have very strong financial support.

The most important finding related to the 50 lower quarter districts is the presence of four very small school systems among the five independent districts in this category. This example indicates the problems faced by small districts in trying to maintain schools with inadequate enrollments and lack of finances. The lowest 50 county systems are fairly homogeneous in size, economy, cultural environment, and other social factors.

Rankings Based on 19 Variables

Rank	School District
1	Fort Thomas Ind.
2	Beechwood Ind.
3	Murray Ind.
4	Bardstown Ind.
5	Elizabethtown Ind.
6	Fayette County
7	Frankfort Ind.
8	Lexington Ind.
9	Owensboro Ind.
10	Jefferson County
11	Danville Ind.
12	Bellevue Ind.
13	Paducah Ind.
14	Covington Ind.
15	McCracken County
16	Bowling Green Ind.
17	Clark County
18	Fulton Ind.
19	Louisville Ind.
20	Lynch Ind.
21	Daviess County
22	Bourbon County
23	Woodford County
24	Erlanger Ind.
25	Benton Ind.
26	Mt. Sterling Ind.
27	Garrard County
28	Nelson County
29	Oldham County
30	Ludlow Ind.
31	Ashland Ind.
32	Mayfield Ind.
33	Lyon County
34	Raceland Ind.

Rank	School District	Rank	School District
35	Harrison County	91	Larue County
36	Henderson Ind.	92	Liberty Ind.
37	Harrodsburg Ind.	93	Fleming County
38	Walton-Verona Ind.	94	Fulton County
39	Glasgow Ind.	95	Grant County
40	Stanford Ind.	96	Boyd County
41	Robertson County	97	Hazard Ind.
42	Georgetown Ind.	98	Dayton Ind.
43	Fairview Ind.	99	Anderson County
44	Russellville Ind.	100	Greenup Ind.
45	Franklin County	101	Newport Ind.
46	Pikeville Ind.	102	Nicholas County
47	Meade County	103	Irvine Ind.
48	Somerset Ind.	104	Todd County
49	South Portsmouth Ind.	105	Leitchfield Ind.
50	McLean County	106	Taylor County
51	Berea Ind.	107	Augusta Ind.
52	Ballard County	108	Boone County
53	London Ind.	109	Campbell County
54	Campbellsville Ind.	110	Adair County
55	Pineville Ind.	111	Barbourville Ind.
56	Marshall County	112	Allen County
57	Hopkinsville Ind.	113	Metcalfe County
58	Henderson County	114	Catlettsburg Ind.
59	Harlan Ind.	115	Montgomery County
60	Williamstown Ind.	116	Breckinridge County
61	Greenville Ind.	117	Warren County
62	Paris Ind.	118	Silver Grove Ind.
63	Williamsburg Ind.	119	Scott County
64	Scottsville Ind.	120	Mason County
65	Russell Ind.	121	Jessamine County
66	Central City Ind.	122	Falmouth Ind.
67	Burgin Ind.	123	Barren County
68	Caldwell County	124	Bullitt County
69	Calloway County	125	Bracken County
70	Hardin County	126	Carlisle County
71	Kenton County	127	Providence Ind.
72	Hancock County	128	Caverna Ind.
73	Corbin Ind.	129	Hopkins County
74	Trigg County	130	Jenkins Ind.
75	Simpson County	131	Monticello Ind.
76	Shelbyville Ind.	132	Rowan County
77	Union County	133	Earlington Ind.
78	Richmond Ind.	134	Webster County
79	Henry County	135	Gallatin County
80	Maysville Ind.	136	Green County
81	Christian County	137	Mercer County
82	Crittenden County	138	Cloverport Ind.
83	Graves County	139	Russell County
84	Dawson Springs Ind.	140	Madison County
85	Hickman County	141	Marion County
86	Paintsville Ind.	142	Monroe County
87	Livingston County	143	Muhlenberg County
88	Shelby County	144	Logan County
89	Pendleton County	145	Lincoln County
90	Boyle County	146	Hart County

Rank	School District
147	Butler County
148	Rockcastle County
149	Eminence Ind.
150	Pulaski County
151	Washington County
152	Middlesboro Ind.
153	Cumberland County
154	Clinton County
155	Spencer County
156	Pike County
157	Trimble County
158	Bath County
159	Floyd County
160	Edmonson County
161	Bell County
162	Owen County
163	Harlan County
164	Ferguson Ind.
165	Grayson County
166	Casey County
167	Knott County
168	Wolfe County
169	McCreary County
170	Wayne County
171	Elliott County
172	Breathitt County
173	Owsley County
174	Ohio County
175	Laurel County
176	Knox County
177	Lee County
178	Carter County
179	Carroll County
180	Powell County
181	Johnson County
182	Whitley County
183	Morgan County
184	Letcher County
185	Lewis County
186	Greenup County
187	Lawrence County
188	Estill County
189	Clay County
190	Magoffin County
191	Jackson Ind.
192	Martin County
193	Perry County
194	Jackson County
195	Van Lear Ind.
196	Menifee County
197	Leslie County

Rankings of 197 Public School Districts on Five Quality Variables

Adjacent school districts with rather similar economic, cultural, and environmental conditions often differ greatly in the quality of schools provided; therefore, this ranking which is based upon quality criteria (output) should indicate how districts that have somewhat equal resources compare.

Rankings of 197 Kentucky school districts on the basis of 19 variables presented earlier and this ranking based on 5 variables may be compared by the following table:

Fifty Upper Quarter Districts

Rankings Based on	Type of District	
	County	Independent
19 Variables	16	34
5 Variables	9	41

It is evident from an analysis of the data obtained on the 197 school districts that relationships exist between the nineteen-variable and the five-variable rankings. However, when the 50 upper quarter districts are ranked by the five output variables, the number of independent districts in the top quarter increases substantially. Also, when rankings were made using five variables, the upper 50 districts included 19 districts, 9 independent and 10 county districts, that were not present in the earlier nineteen-variable ranking.

Both sets of rankings are included so the reader may use either one depending upon his purpose. If the primary interest is in quality ranking according to holding power and achievement test scores, then the five-variable ranking would be preferable. If the primary interest is in gaining greater insight into the input-process-output, then the nineteen-variable rating would be more applicable.

Rankings Based on Five Variables

Rank	School District
1	Beechwood Ind.
2	Murray Ind.
3	Fort Thomas Ind.
4	Greenville Ind.
5	Danville Ind.
6	Bellevue Ind.
7	Fulton Ind.
8	Pikeville Ind.
9	Bardstown Ind.
10	Frankfort Ind.
11	Benton Ind.
12	Shelbyville Ind.
13	Bowling Green Ind.
14	Fayette County
15	Russellville Ind.
16	Harrodsburg Ind.
17	Erlanger Ind.
18	Elizabethtown Ind.
19	Owensboro Ind.
20	Mayfield Ind.
21	Jefferson County
22	McCracken County
23	London Ind.
24	Somerset Ind.
25	Walton-Verona Ind.
26	Ashland Ind.
27	Burgin Ind.
28	Paducah Ind.
29	Caldwell County
30	Henderson Ind.
31	Georgetown Ind.
32	Leitchfield Ind.
33	Simpson County
34	Glasgow Ind.
35	Lexington Ind.
36	Berea Ind.
37	Hazard Ind.
38	Dawson Springs Ind.
39	Pineville Ind.
40	Henderson County
41	Marshall County
42	Caverna Ind.
43	Larue County
44	Augusta Ind.
45	Mt. Sterling Ind.
46	Garrard County
47	Central City Ind.
48	Hickman County
49	Daviess County
50	Scottsville Ind.
51	Russell Ind.
52	Kenton County
53	South Portsmouth Ind.
54	Paintsville Ind.
55	Clark County
56	Allen County
57	Ludlow Ind.
58	Harrison County
59	Campbellsville Ind.
60	Stanford Ind.
61	Franklin County
62	Williamsburg Ind.
63	Providence Ind.
64	Raceland Ind.
65	Christian County
66	Meade County
67	McLean County
68	Calloway County
69	Hancock County
70	Ballard County
71	Corbin Ind.
72	Pendleton County
73	Henry County
74	Barbourville Ind.
75	Richmond Ind.
76	Oldham County
77	Covington Ind.
78	Shelby County
79	Harlan Ind.
80	Anderson County
81	Eminence Ind.
82	Washington County
83	Boone County
84	Bourbon County
85	Monticello Ind.
86	Graves County
87	Paris Ind.
88	Maysville Ind.
89	Breckinridge County
90	Earlington Ind.
91	Lynch Ind.
92	Hopkinsville Ind.
93	Greenup Ind.
94	Casey County
95	Jessamine County
96	Webster County
97	Adair County
98	Boyle County
99	Carlisle County
100	Bullitt County
101	Irvine Ind.
102	Mercer County

Rank	School District
103	Fleming County
104	Catlettsburg Ind.
105	Scott County
106	Logan County
107	Hopkins County
108	Louisville Ind.
109	Crittenden County
110	Cloverport Ind.
111	Montgomery County
112	Campbell County
113	Woodford County
114	Dayton Ind.
115	Trimble County
116	Spenser County
117	Knott County
118	Floyd County
119	Lyon County
120	Trigg County
121	Nelson County
122	Union County
123	Hardin County
124	Nicholas County
125	Grant County
126	Bracken County
127	Cumberland County
128	Green County
129	Edmonson County
130	Pike County
131	Taylor County
132	Williamstown Ind.
133	Barren County
134	Jackson Ind.
135	Owsley County
136	Jenkins Ind.
137	Madison County
138	Fulton County
139	Fairview Ind.
140	Mason County
141	Clinton County
142	Robertson County
143	Marion County
144	McCreary County
145	Boyd County
146	Grayson County
147	Metcalfe County
148	Rockcastle County
149	Ohio County
150	Livingston County
151	Russell County
152	Warren County
153	Newport Ind.
154	Butler County
155	Owen County
156	Muhlenberg County
157	Monroe County
158	Silver Grove Ind.
159	Liberty Ind.
160	Letcher County
161	Falmouth Ind.
162	Rowan County
163	Todd County
164	Lawrence County
165	Greenup County
166	Middlesboro Ind.
167	Powell County
168	Lincoln County
169	Elliott County
170	Johnson County
171	Wayne County
172	Gallatin County
173	Morgan County
174	Carroll County
175	Bath County
176	Hart County
177	Carter County
178	Lee County
179	Lewis County
180	Harlan County
181	Bell County
182	Wolfe County
183	Pulaski County
184	Laurel County
185	Magoffin County
186	Breathitt County
187	Perry County
188	Clay County
189	Martin County
190	Menifee County
191	Ferguson Ind.
192	Estill County
193	Whitley County
194	Jackson County
195	Leslie County
196	Knox County
197	Van Lear Ind.

CHAPTER IV

CONCLUSIONS AND INTERPRETATIONS

The following conclusions and interpretations are drawn from profile analysis of 197 school districts where the criteria for ranking were the nineteen quality indicators mentioned earlier. (In offering conclusions and interpretations one should not need to detail the problems of formulating generalizations from the complex and varying data used in this study.)

1. The findings related to rankings of the 197 Kentucky public school systems indicate that independent school districts are superior to county school districts in a substantial majority of cases.

2. The data also reveal that certain areas of Western, Central, and Northern Kentucky have school districts of higher quality than do Eastern Kentucky and adjacent areas.

3. The rankings suggest that community wealth and expenditures largely determine the rank of school districts, and that these factors are related closely to other financial and quality indicator factors.

4. Small independent and county districts without sufficient financial support and enrollments usually have poor schools, yet some few districts with rather small student bodies but strong financial support are exceptions and do have good schools. The data suggest that small districts in the lower Kentucky quartiles should consolidate since systems with inadequate enrollments are drastically limited in programs.

5. School size alone, however, is not the determining factor in school quality because many larger systems with adequate financial resources are inferior; therefore, other factors in addition to those used in this research are responsible for large school districts ranking low in quality. These causes may be a lack of community interest and support, poor administrative leadership, or the influence of a number of other socio-economic and cultural factors combined with the above to affect the quality of school systems. Despite any evidence to the contrary, the fact remains that Kentucky has entirely too many small school districts tenaciously clinging to independence and tradition, thereby depriving children of an opportunity for quality education.

CHAPTER V

PROFILES OF 197 KENTUCKY SCHOOL DISTRICTS

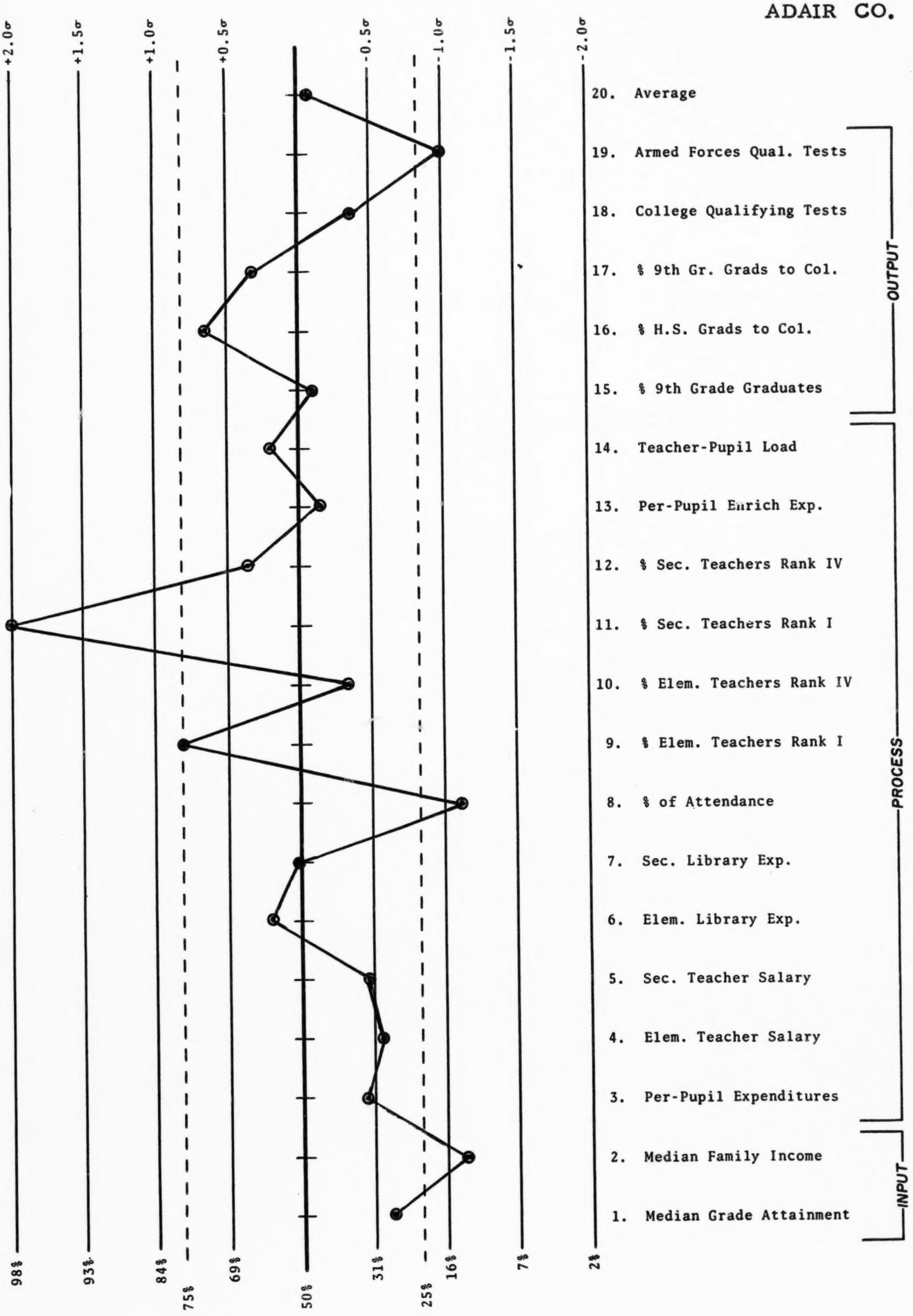
The profiles in this chapter are arranged alphabetically. The rank of the district can be found in Chapter III.

The procedure for developing the profiles is outlined in Chapter IV, and a detailed explanation of the statistical procedures is included in Volume II of this study (now in preparation) on A Methodology for Assessing The Quality of Public Education.

The following suggestions are offered to assist in using the profiles:

1. The state average or mean for each variable is designated by the heavy black 50% line located in the center of each profile. Relative positions of individual districts above or below the state average are graphically presented in standard deviations (σ) at the right and in percentages (%) at the left.
2. Compare the relative positions of the input and process variables with the output variables to see if an upward trend line can be established by the data. For example, if the five output factors (holding power and achievement factors) are well above average yet the expenditures are average or below, one might conclude that the school district is receiving a good return for educational expenditures.
3. A final suggestion pertaining to the overall appearance of the district's profile may be pertinent. A rather marked consistency of approximate equality in the level of the various variables would indicate a rather stable school system in which an awareness of the necessity for emphasis and progress in every category of education exists.

ADAIR CO.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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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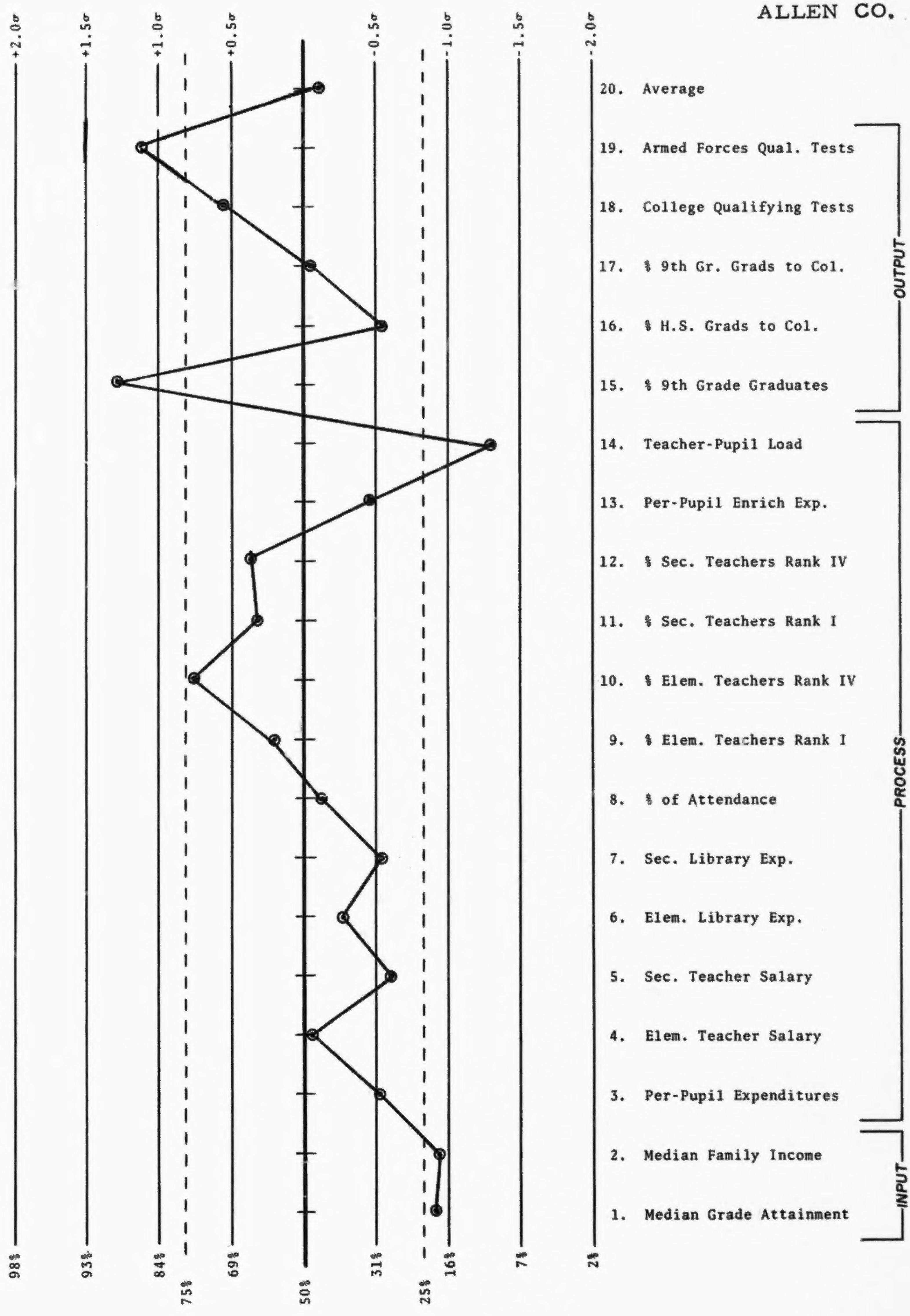
ALLEN CO.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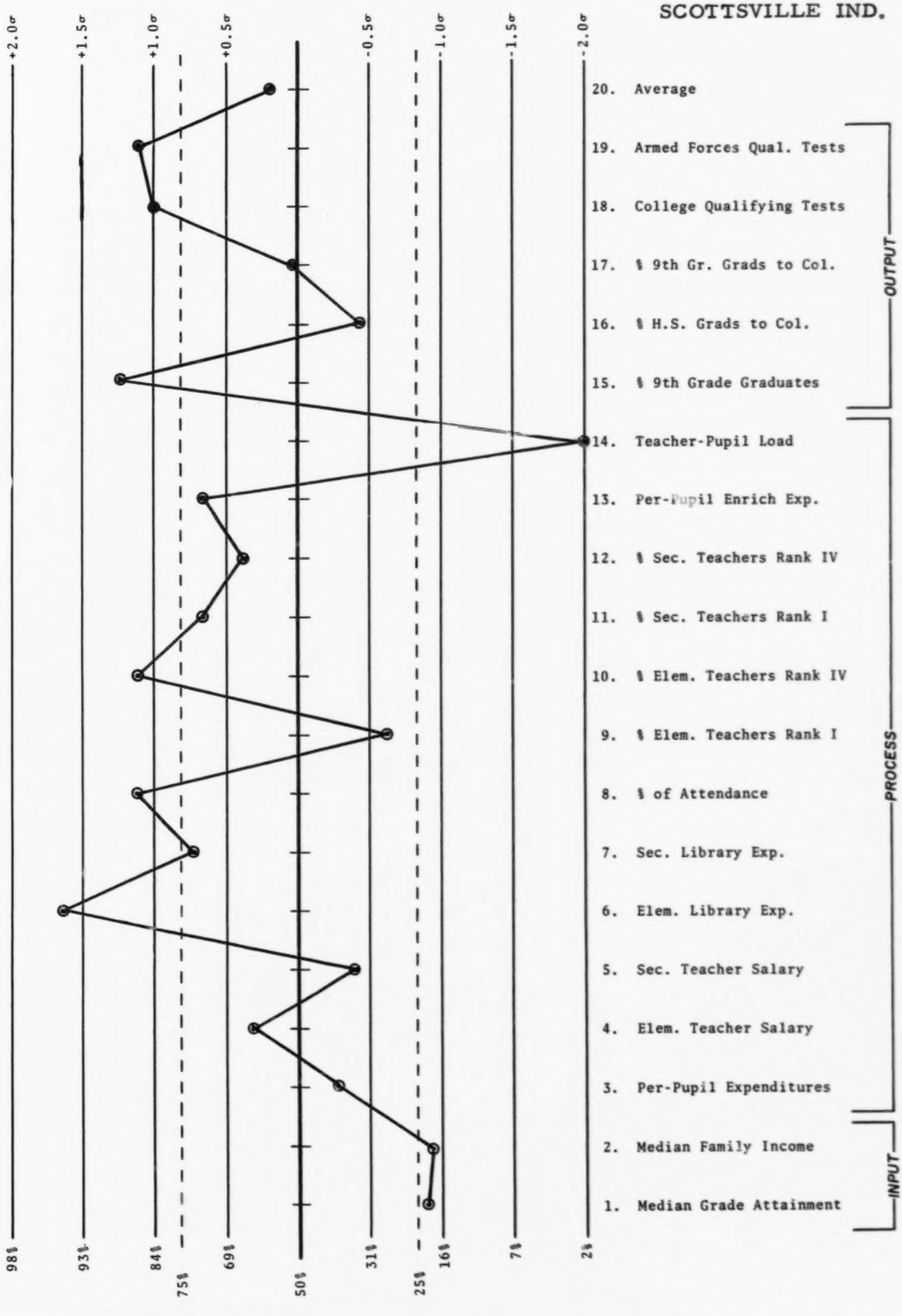
SCOTTSVILLE IND.



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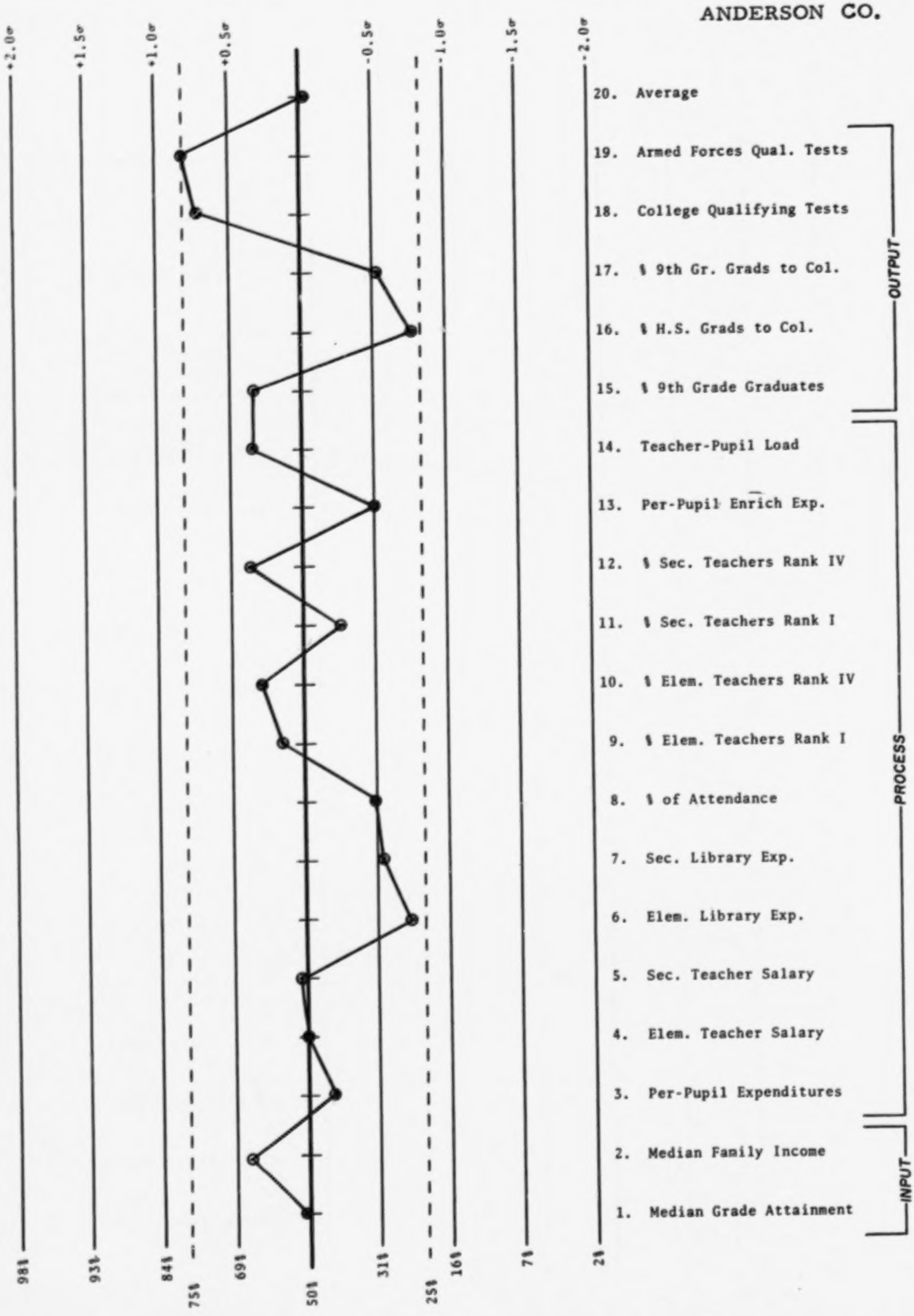
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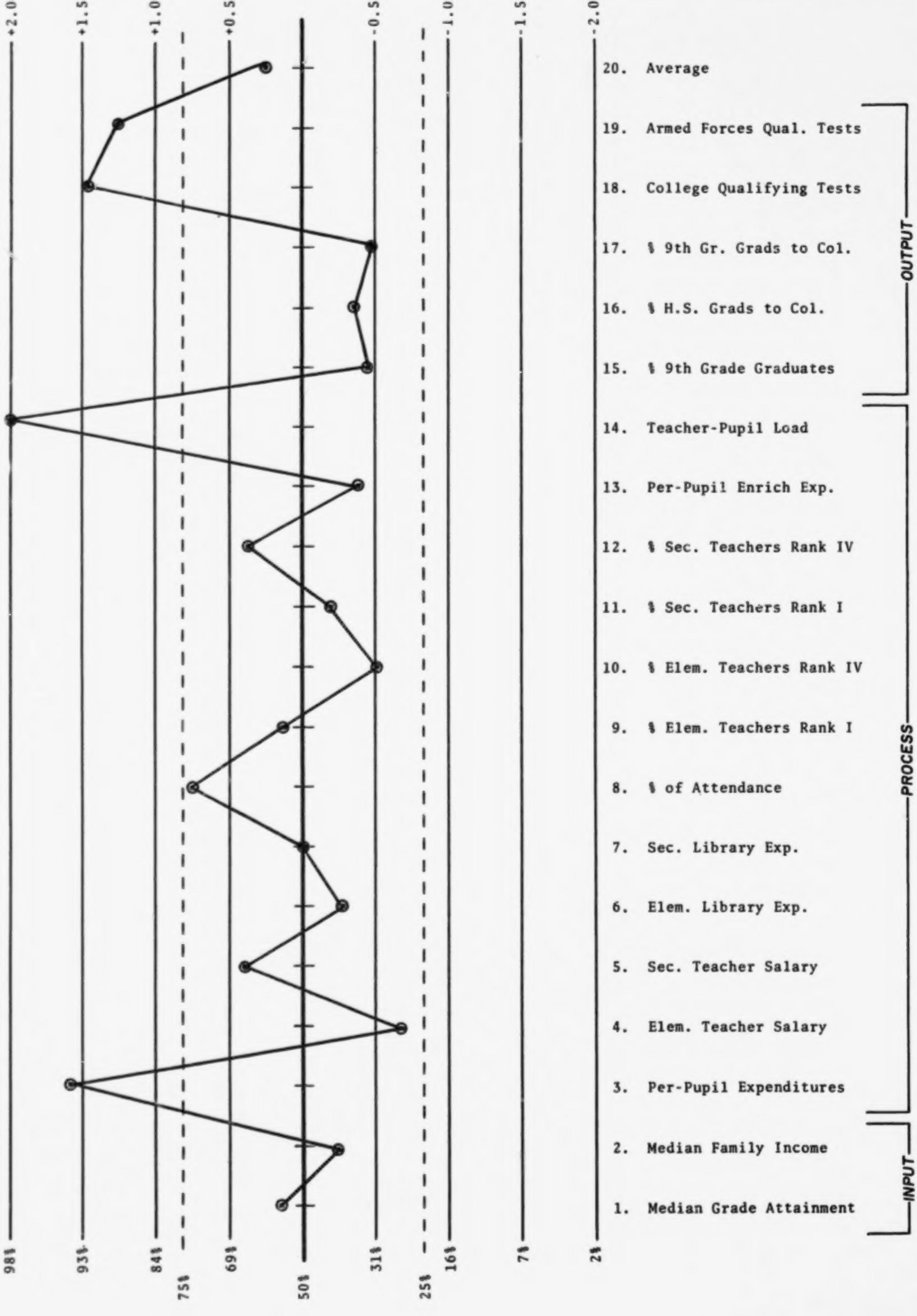
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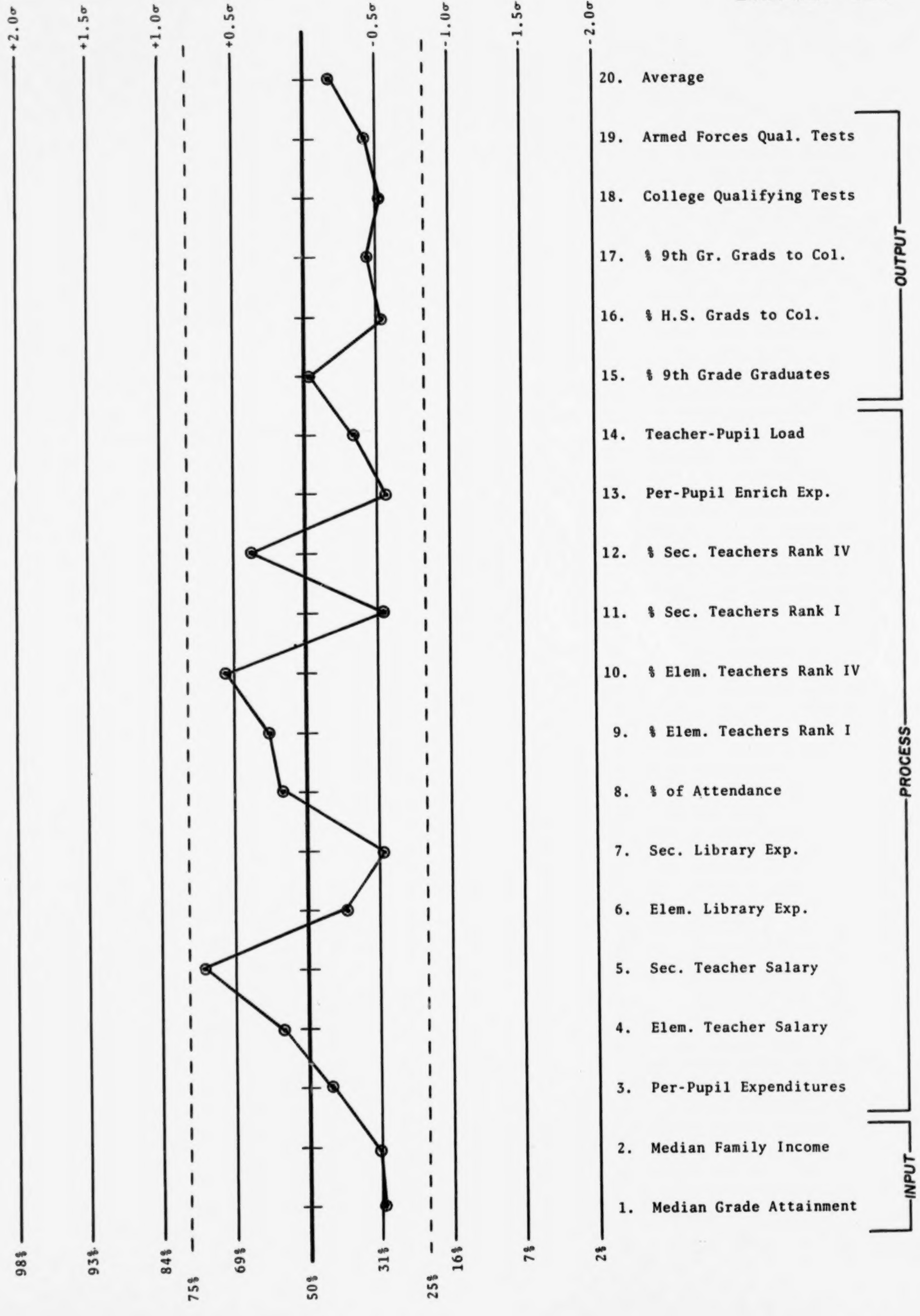
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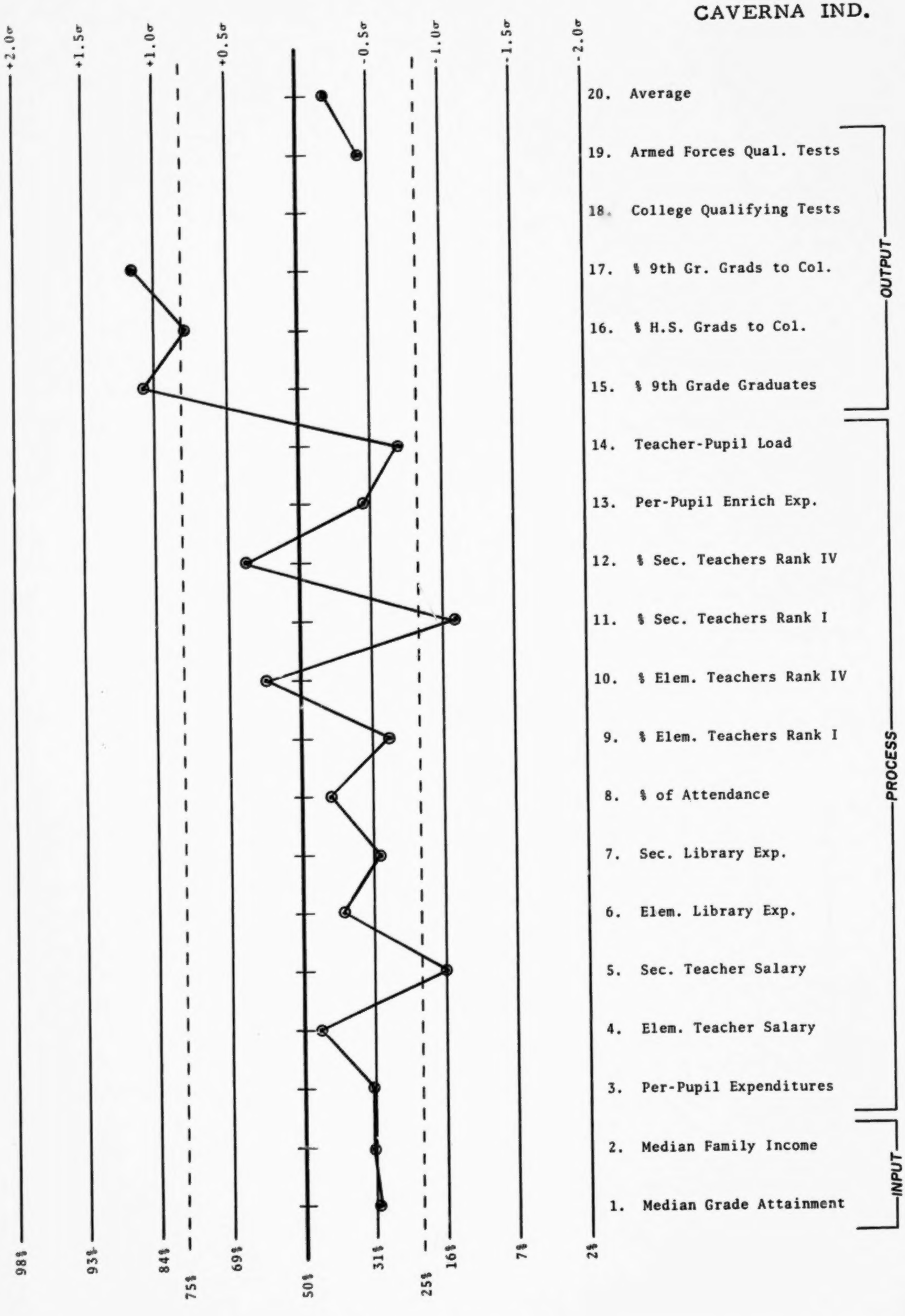
CAVERNA IND.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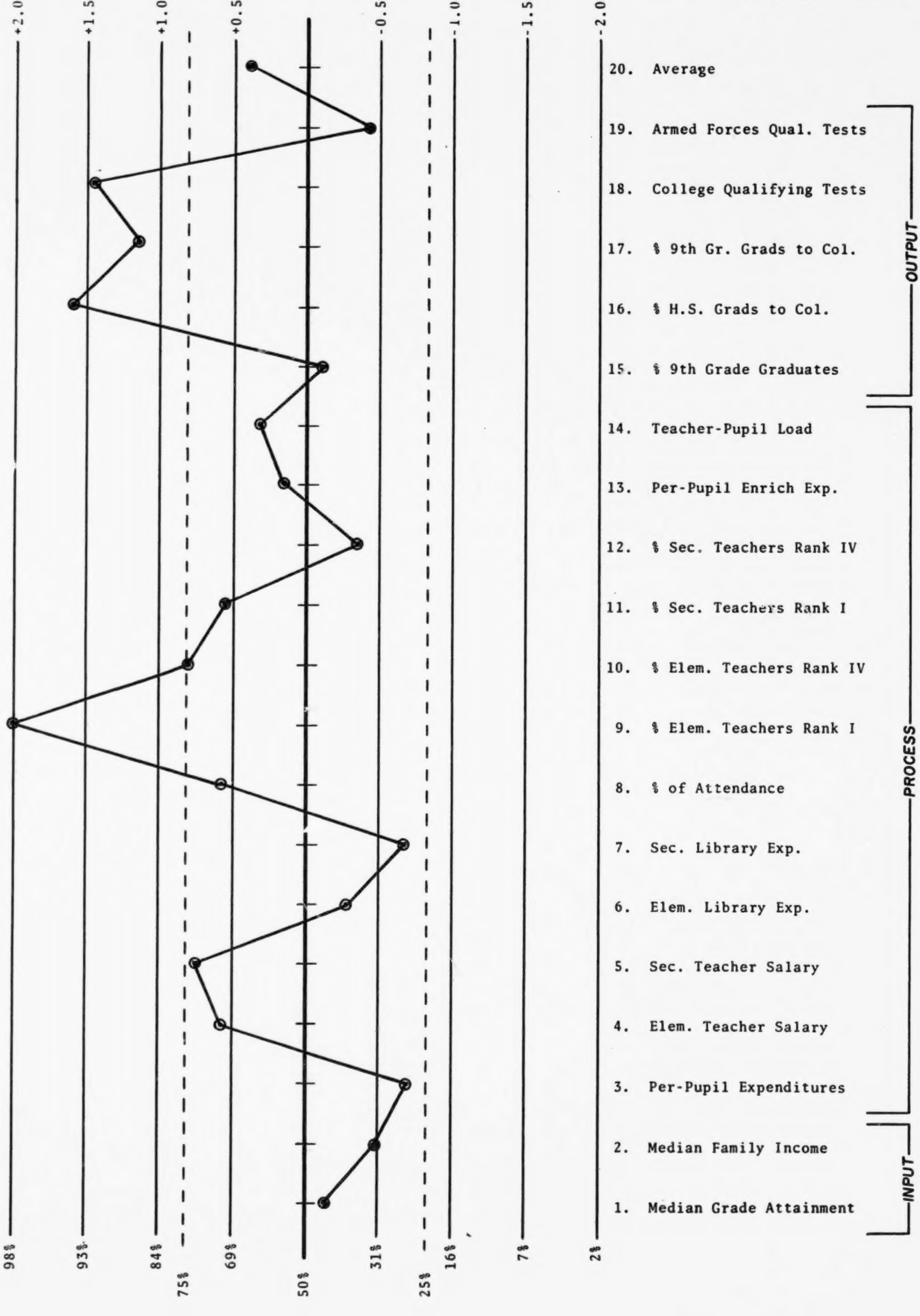
GLASGOW IND.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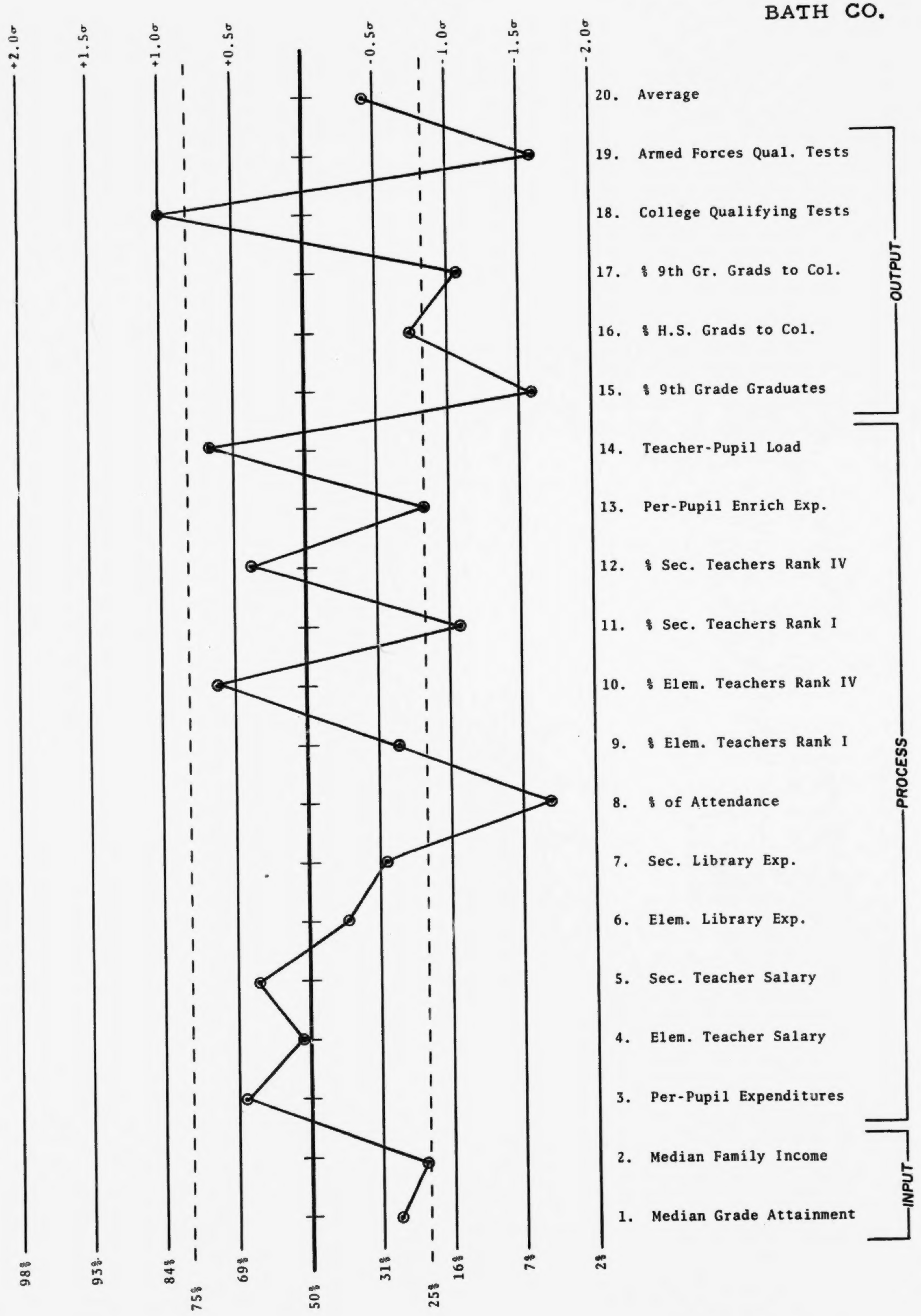
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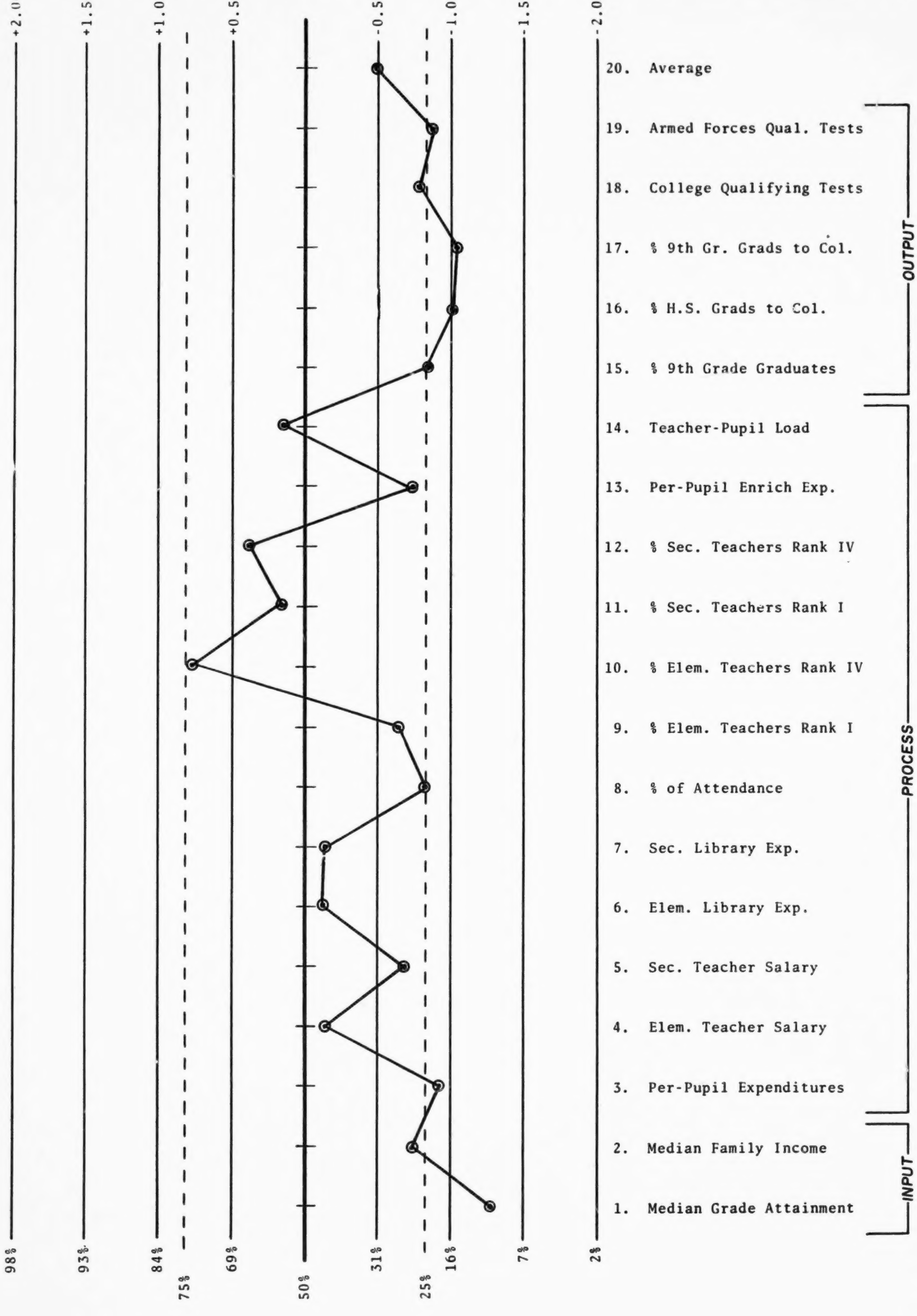
BELL CO.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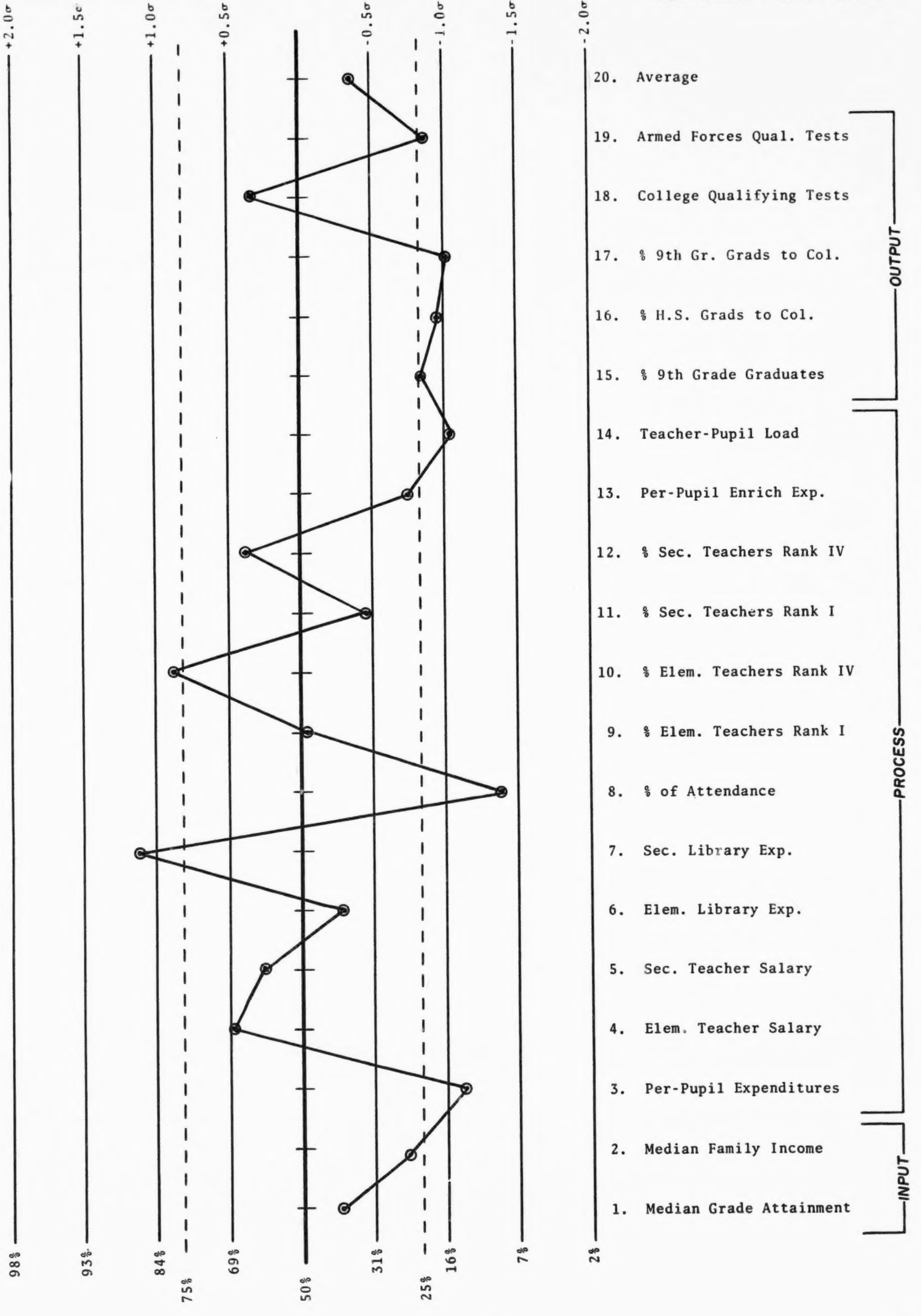
MIDDLESBORO IND.



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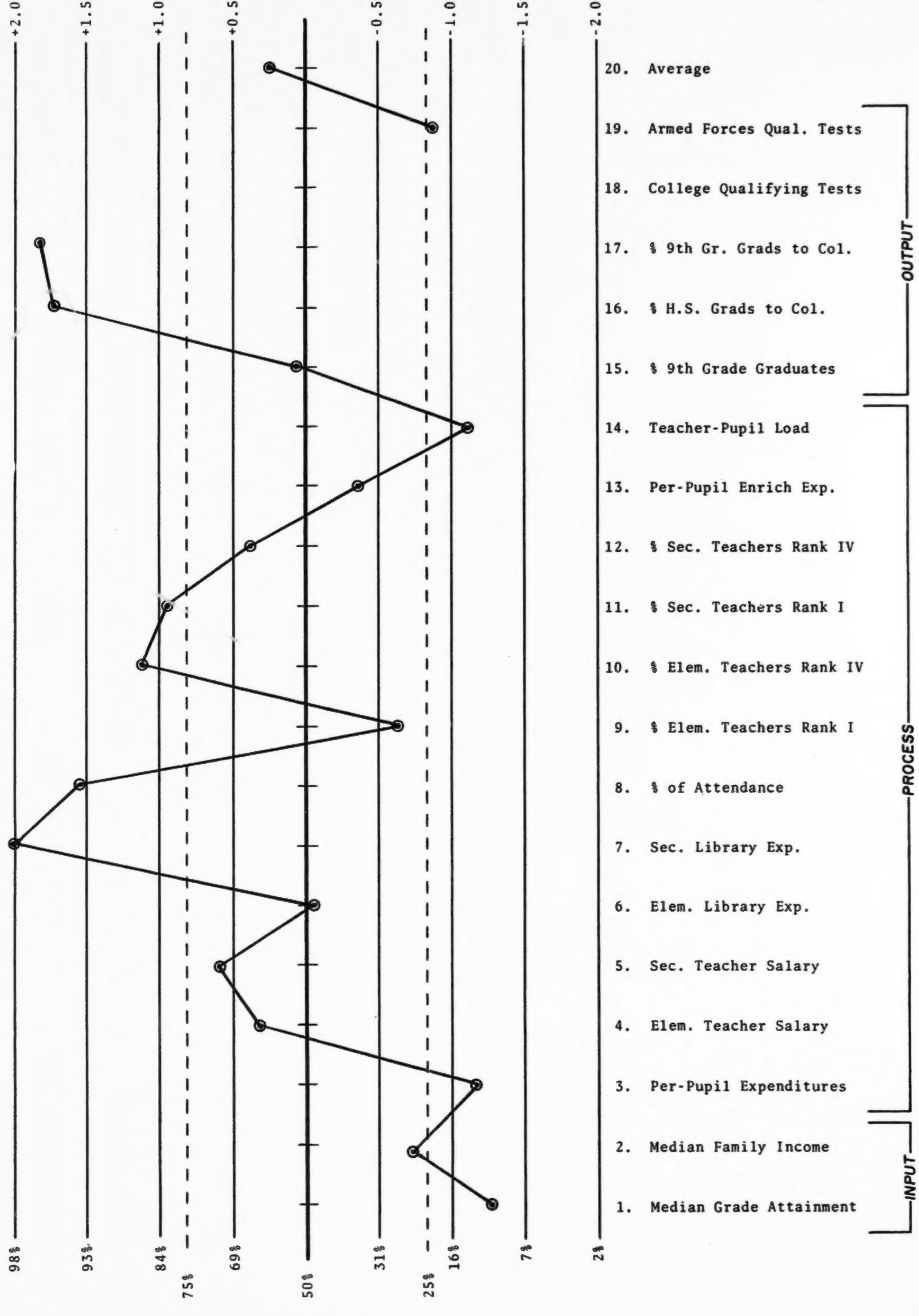

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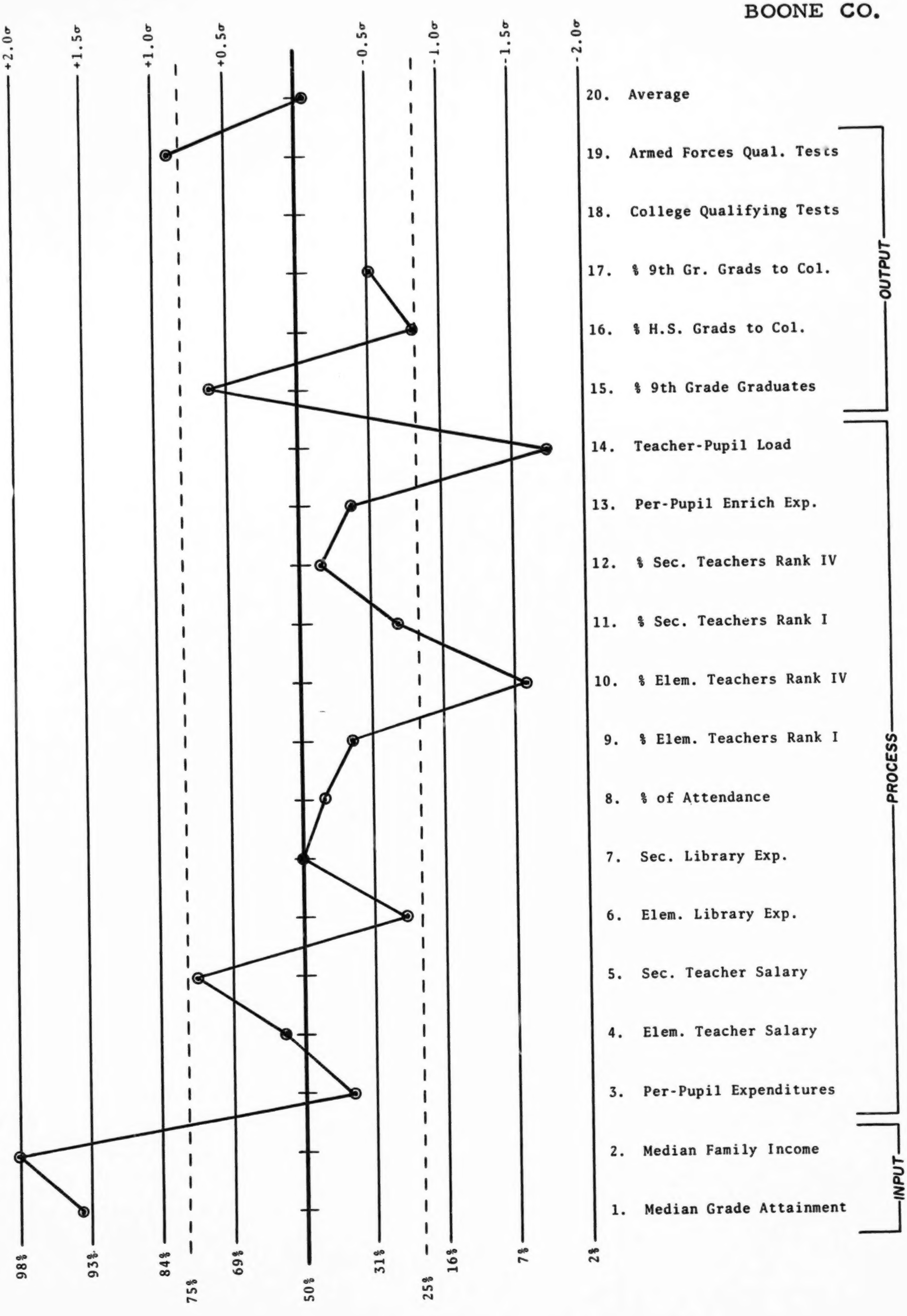
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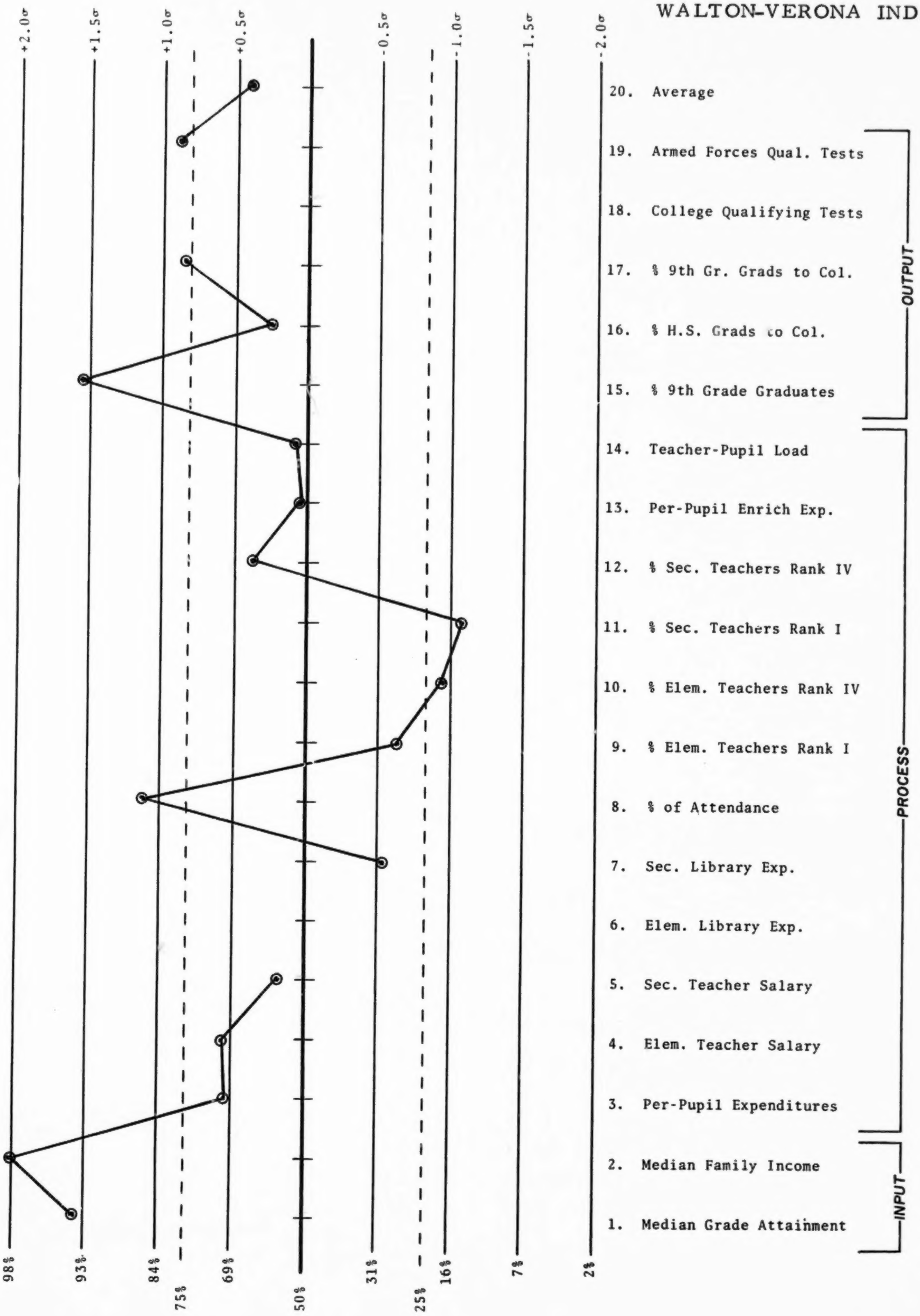
WALTON-VERONA IND.



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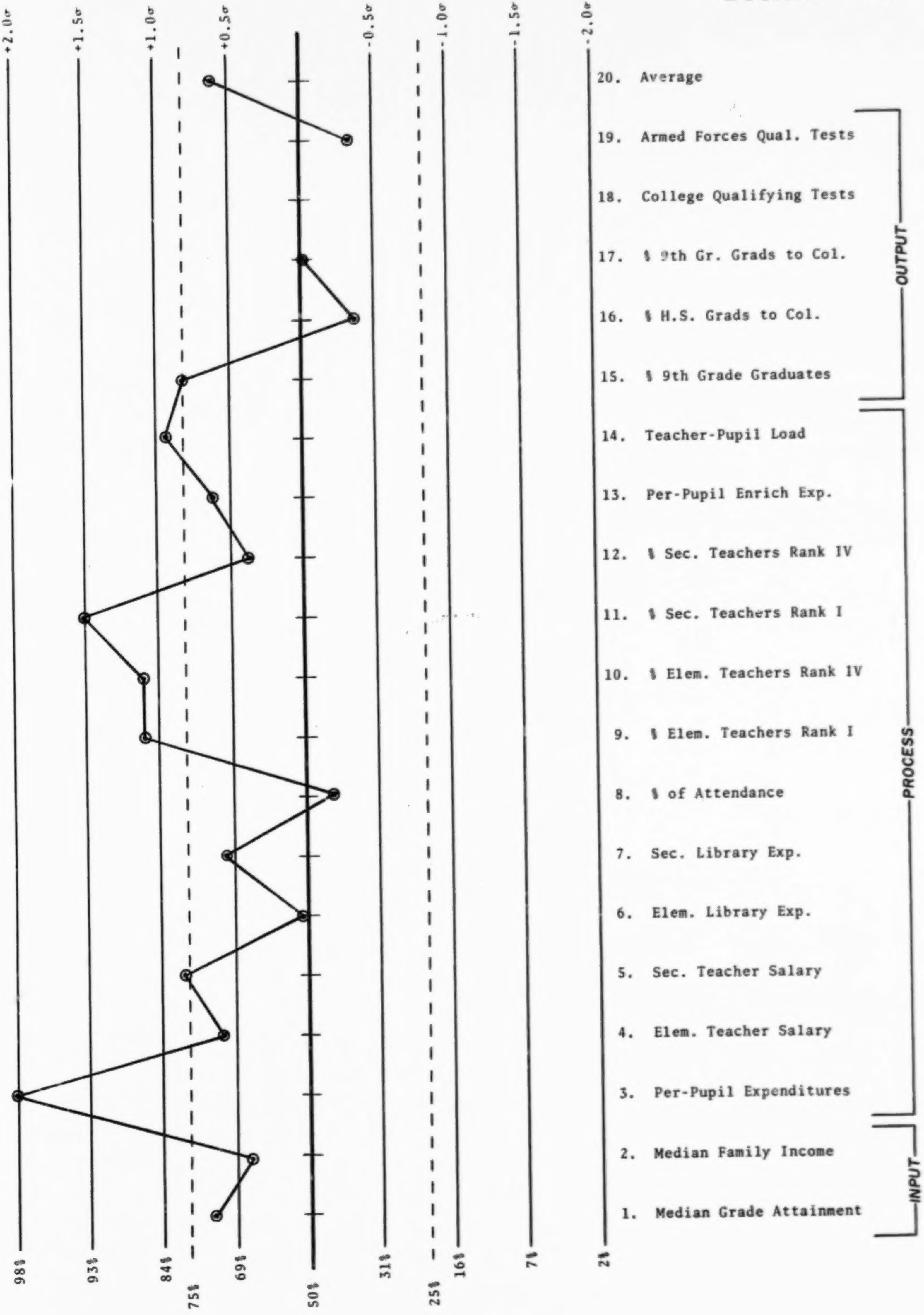
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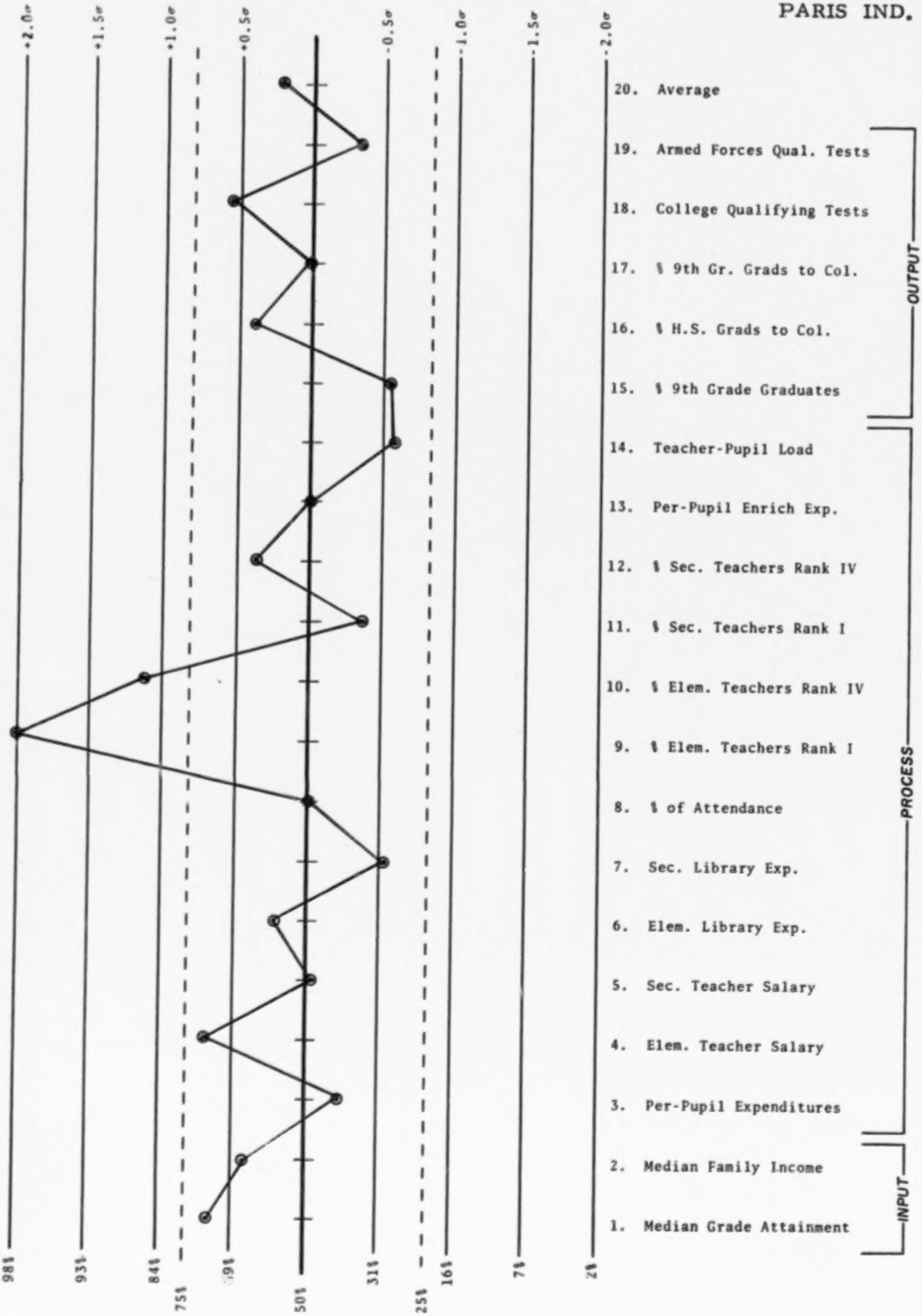
PARIS IND.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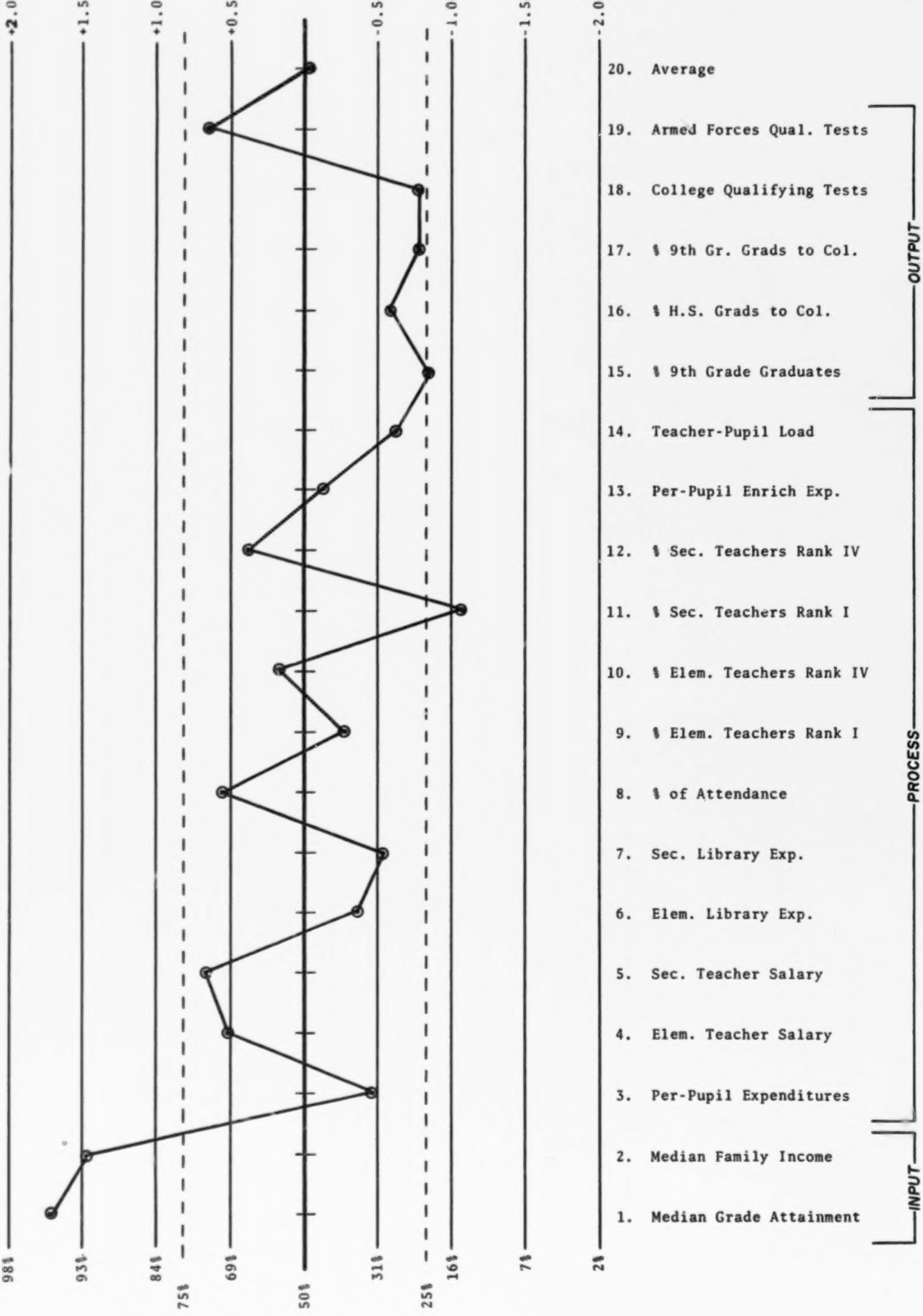
BOYD CO.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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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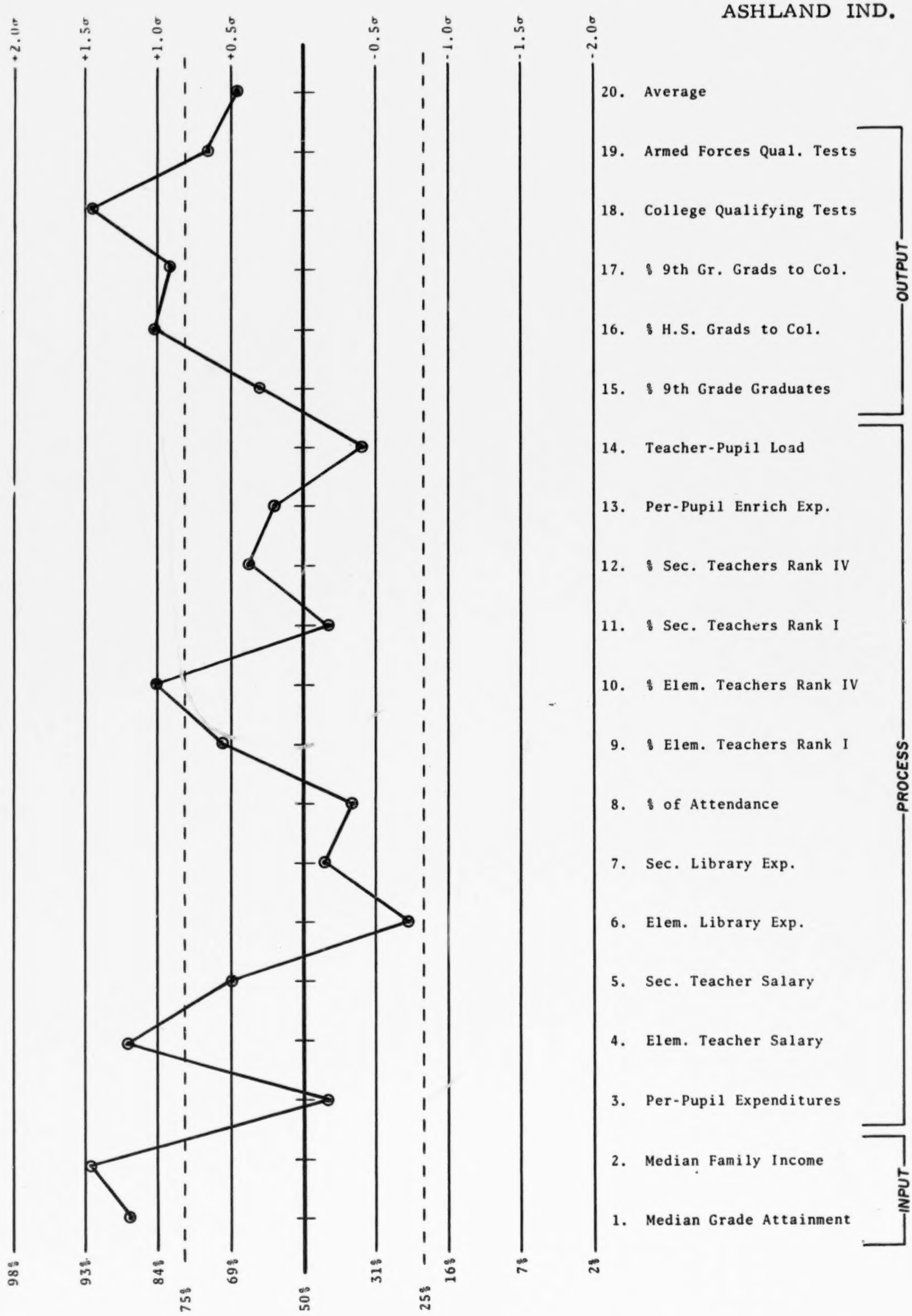
ASHLAND IND.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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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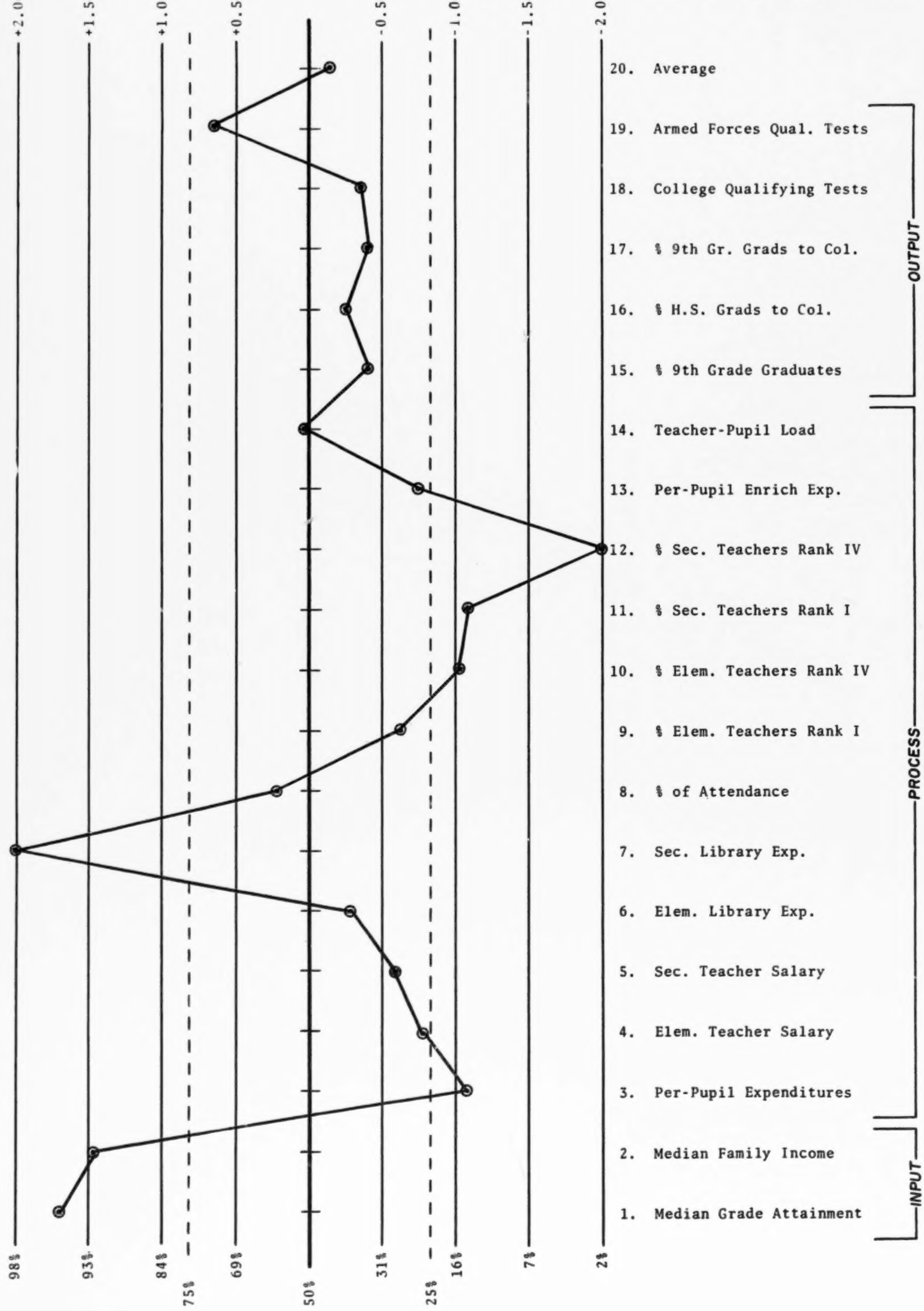
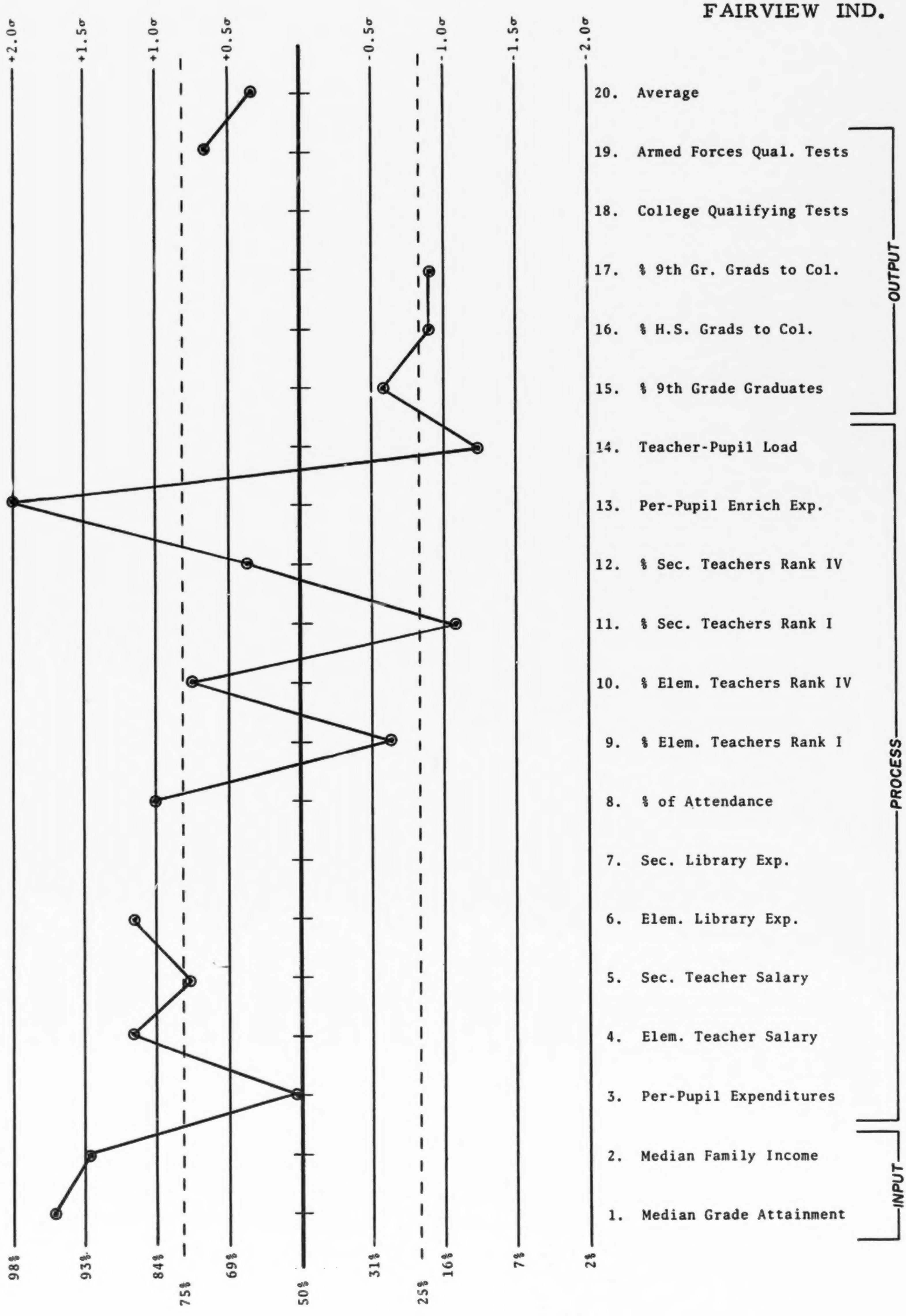
CATLETTSBURG IND.



FAIRVIEW IND.



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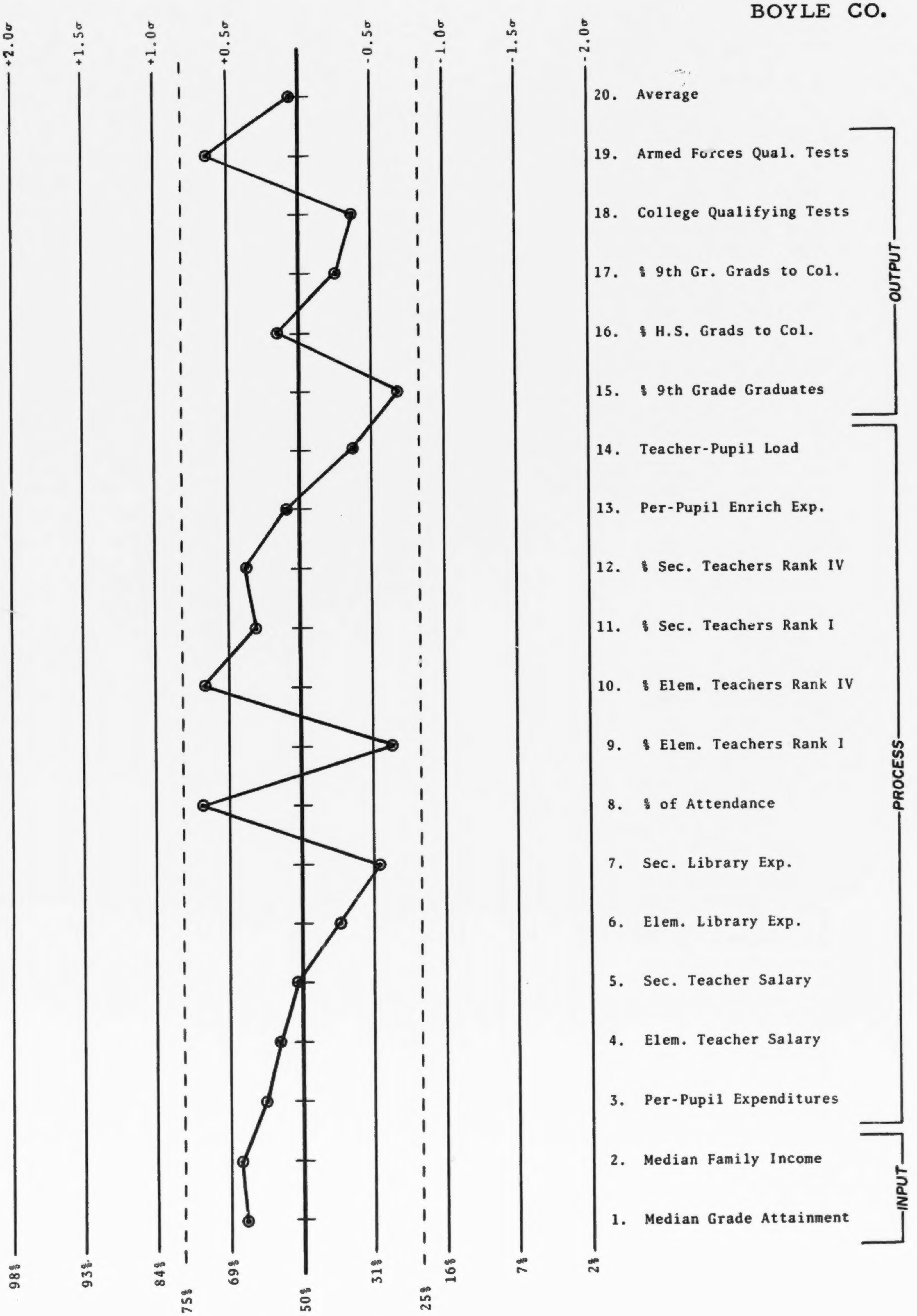
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15. % 9th Grade Graduates
14. Teacher-Pupil Load
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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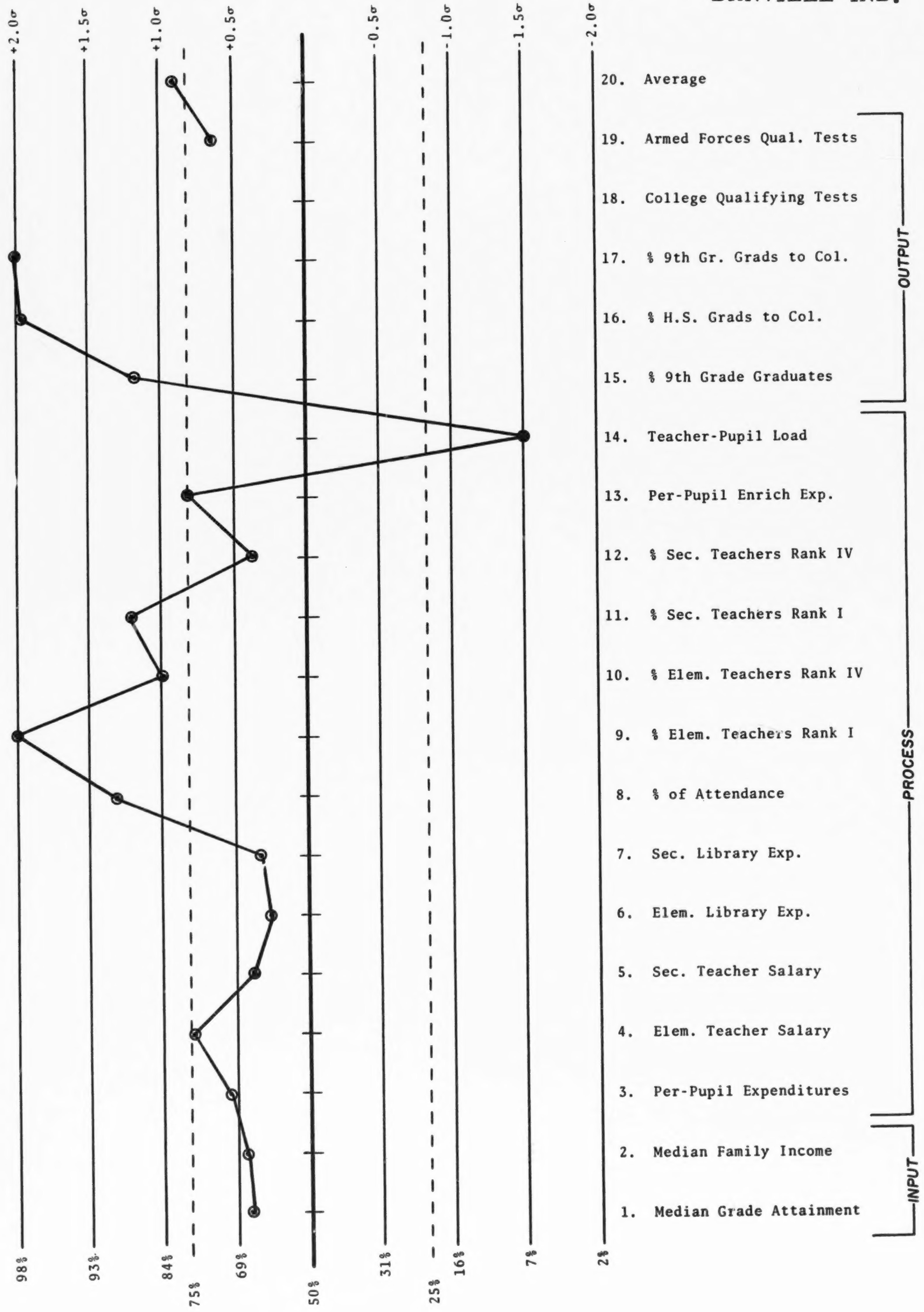
DANVILLE IND.



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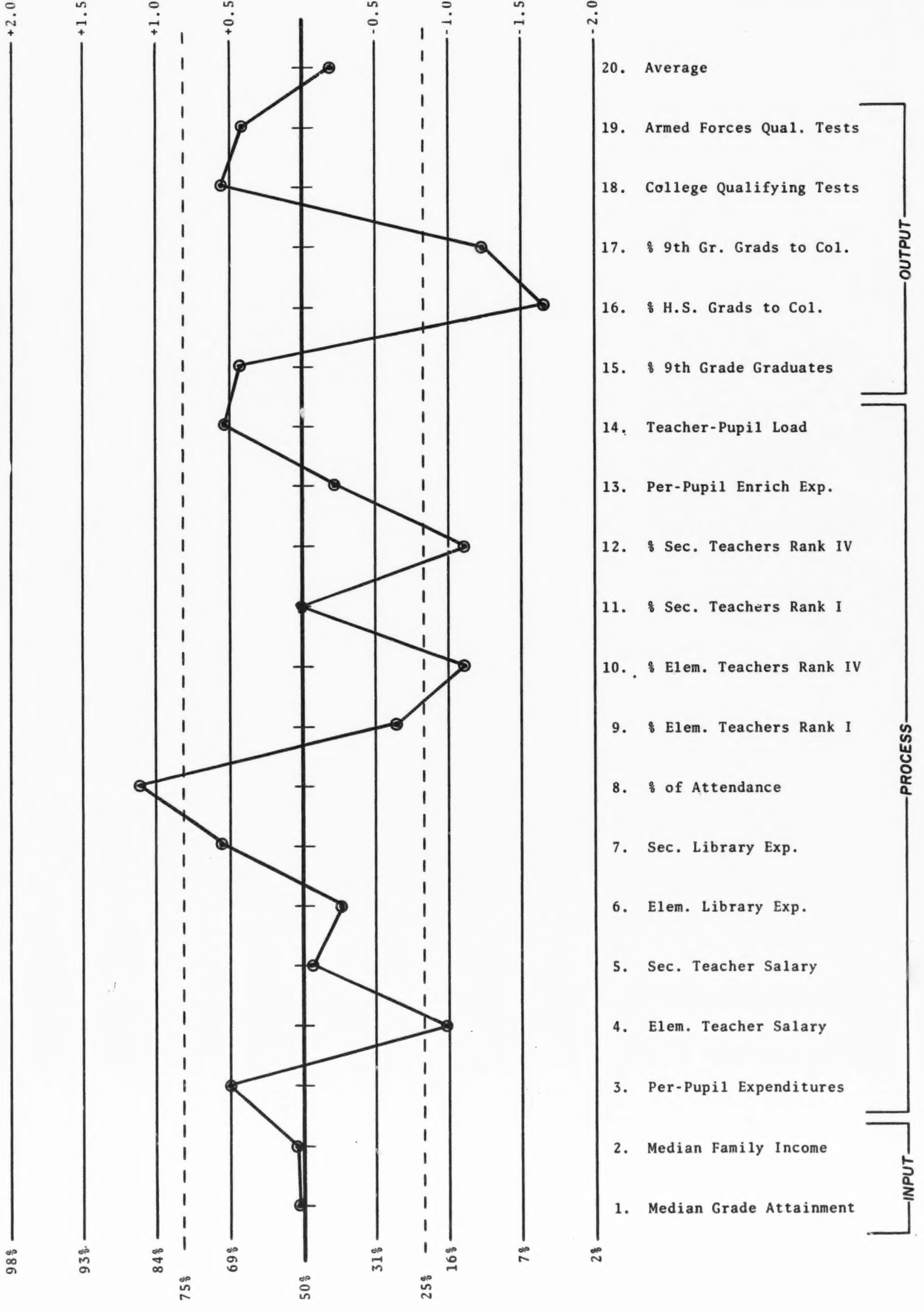
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15. % 9th Grade Graduates
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7. Sec. Library Exp.
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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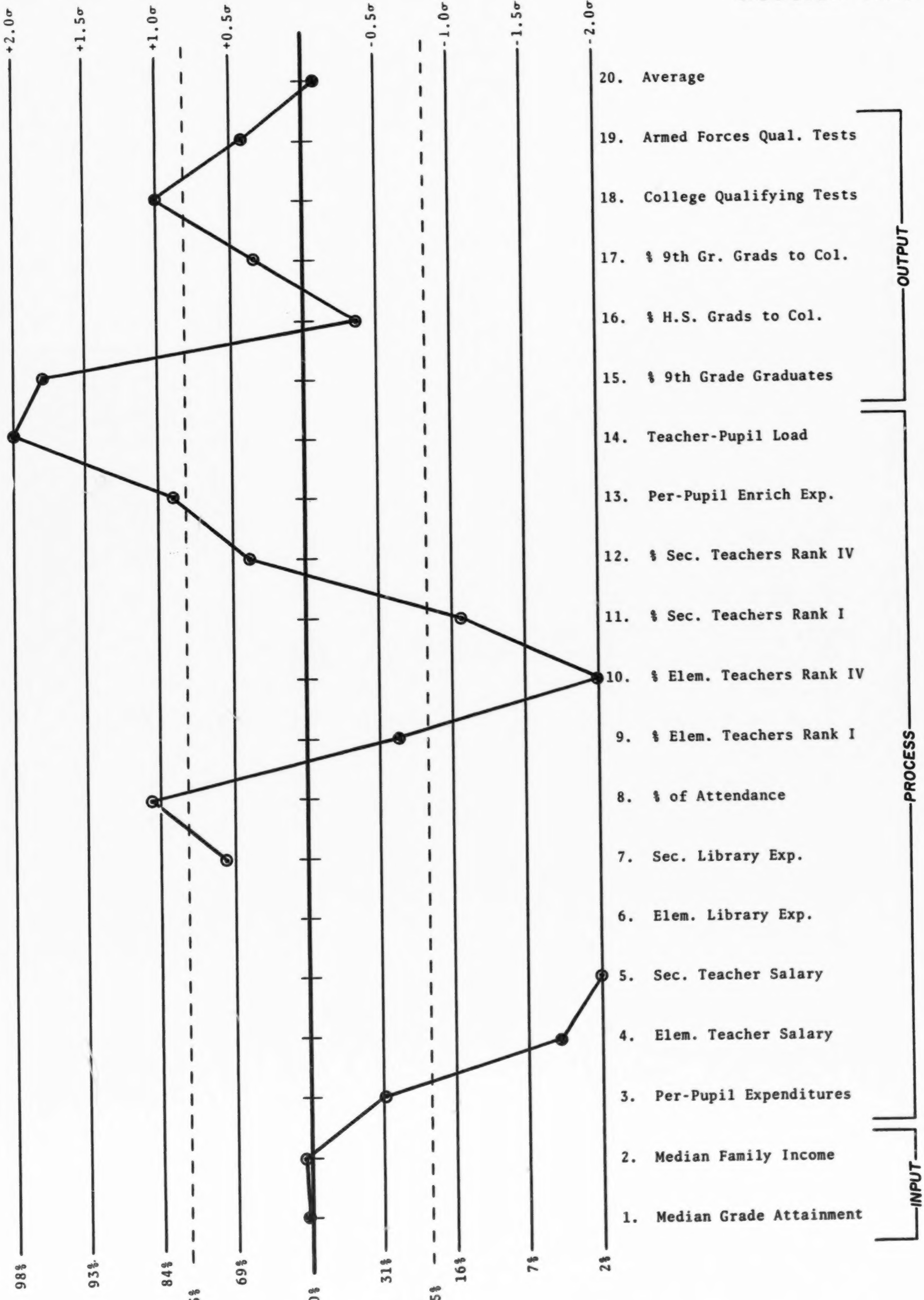
AUGUSTA IND.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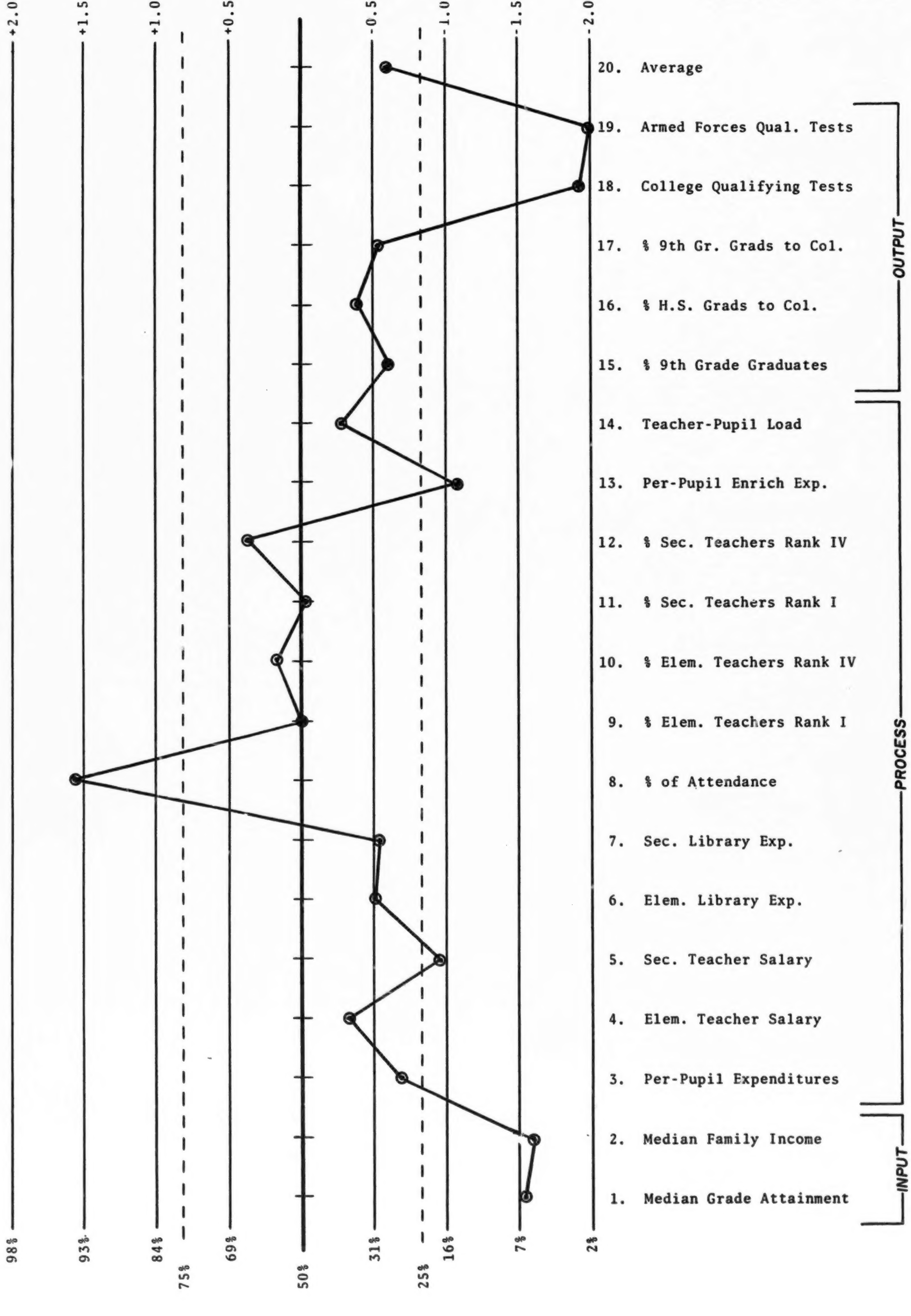
BREATHITT CO.



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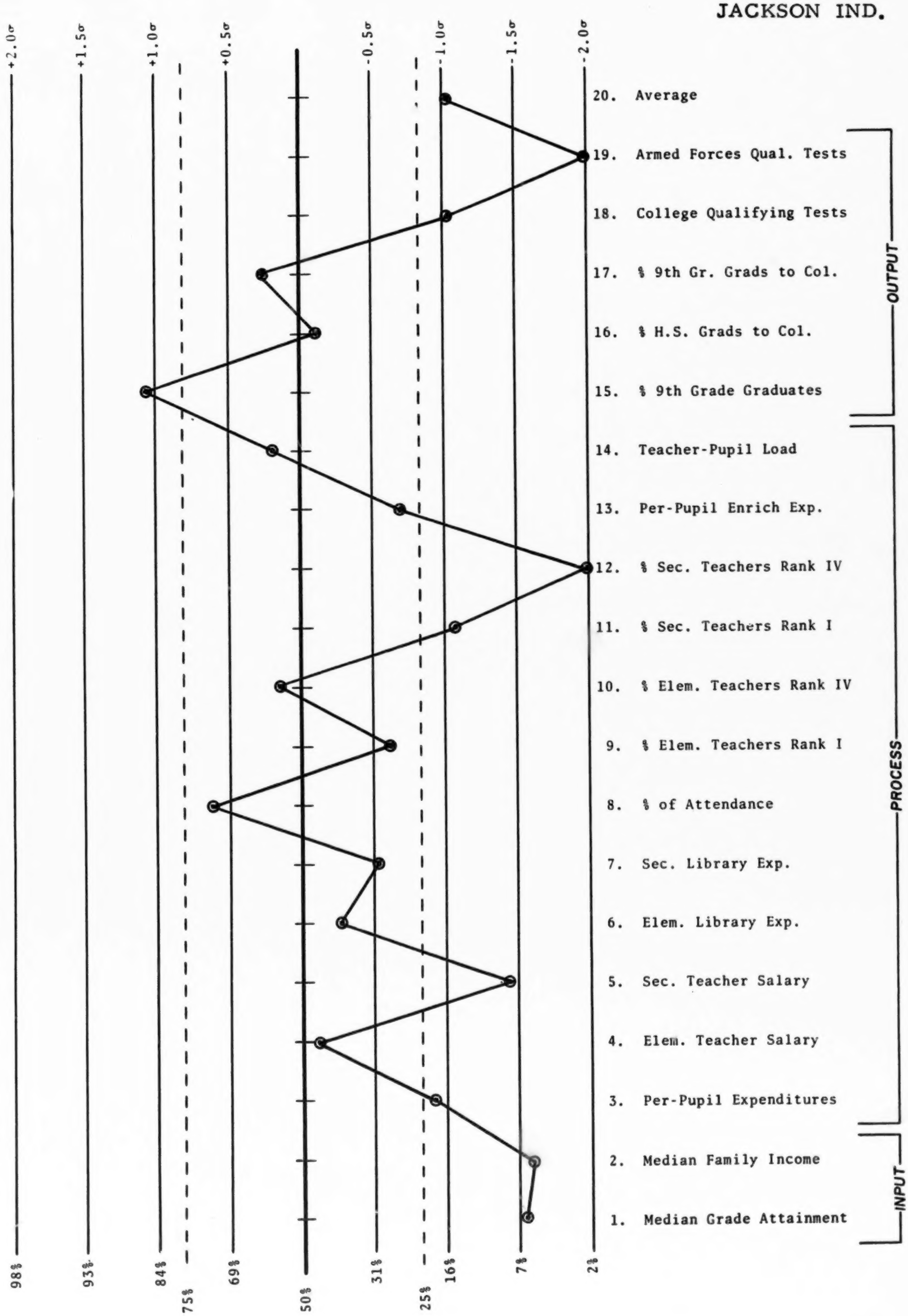
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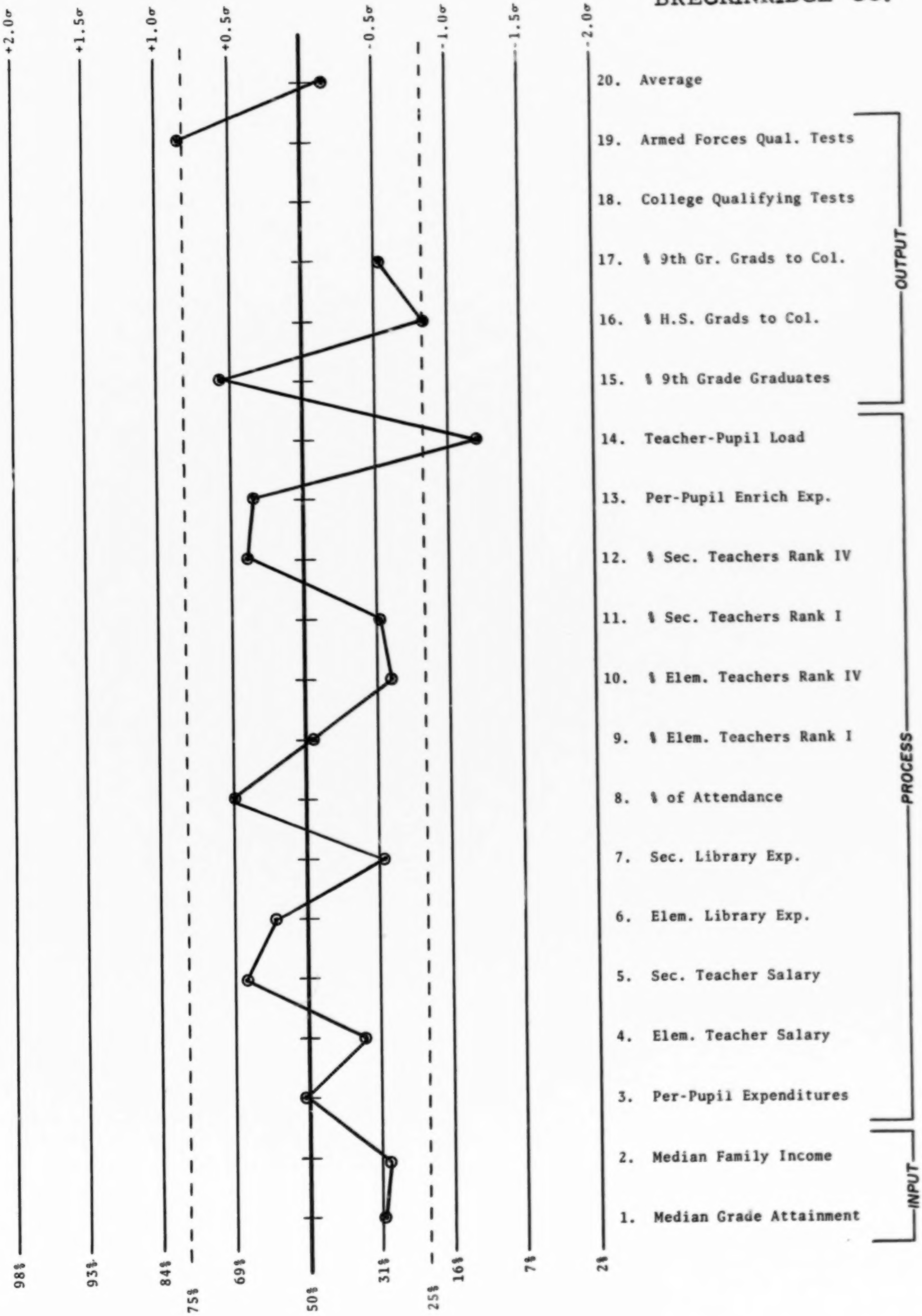
BRECKINRIDGE CO.



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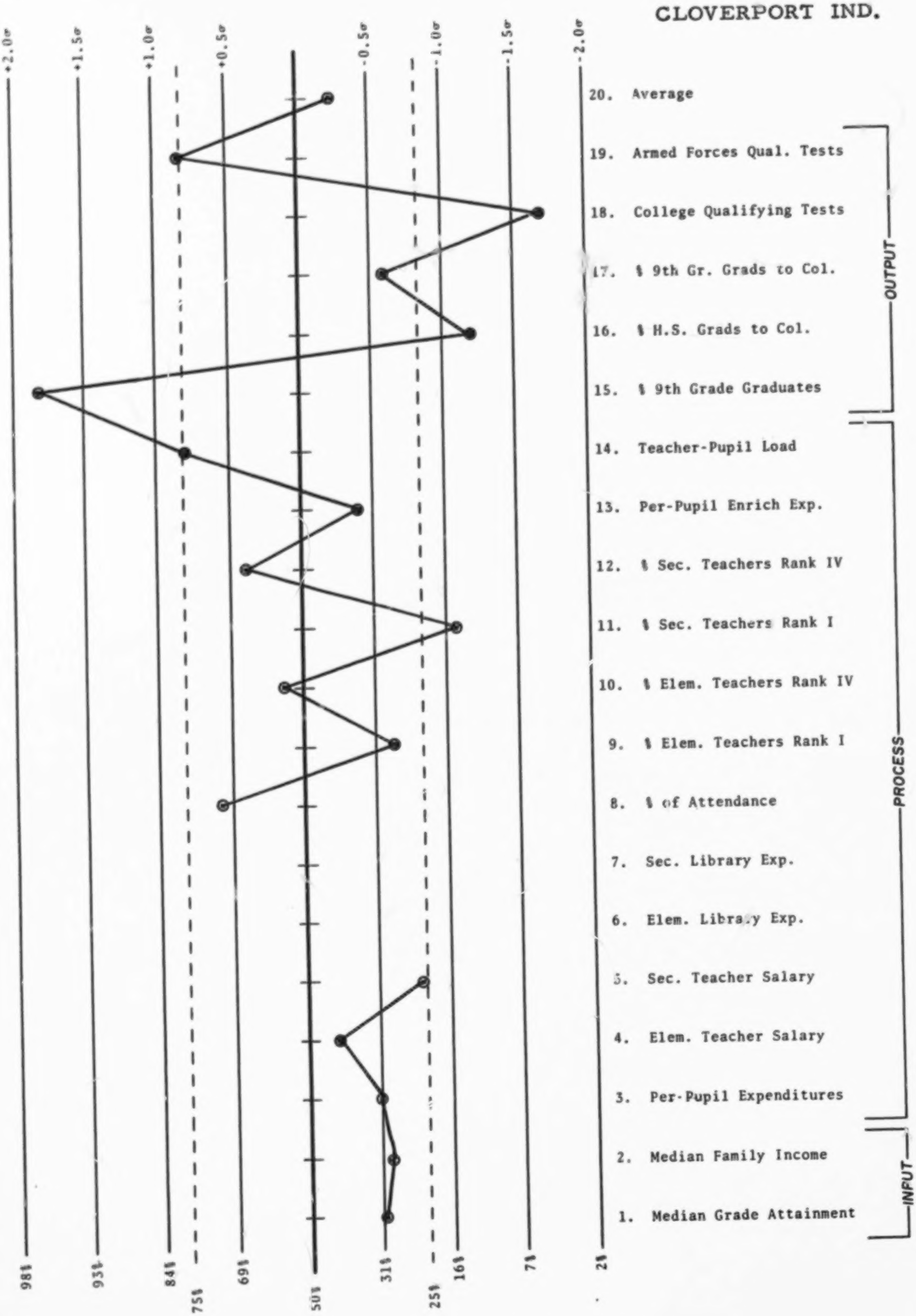

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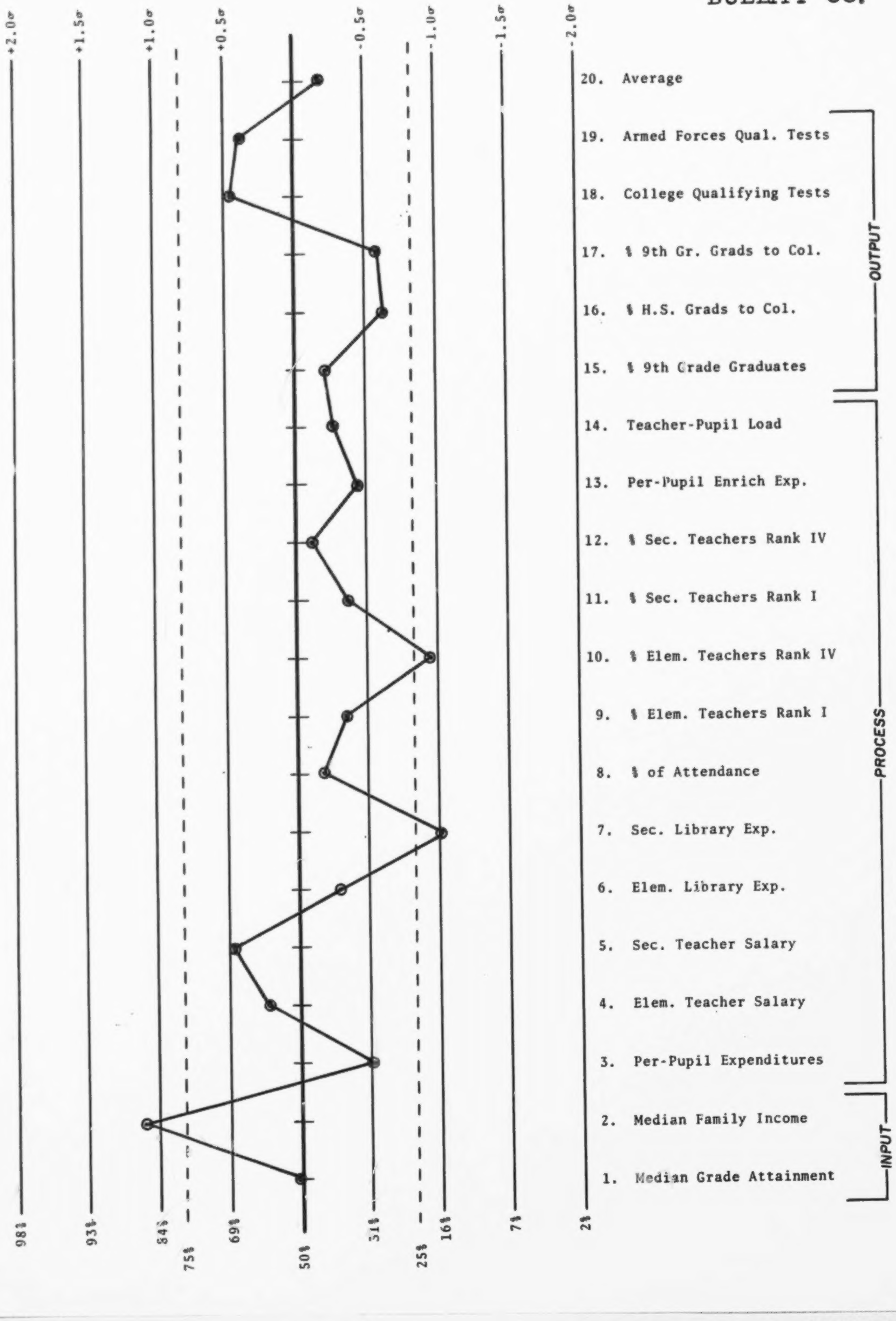
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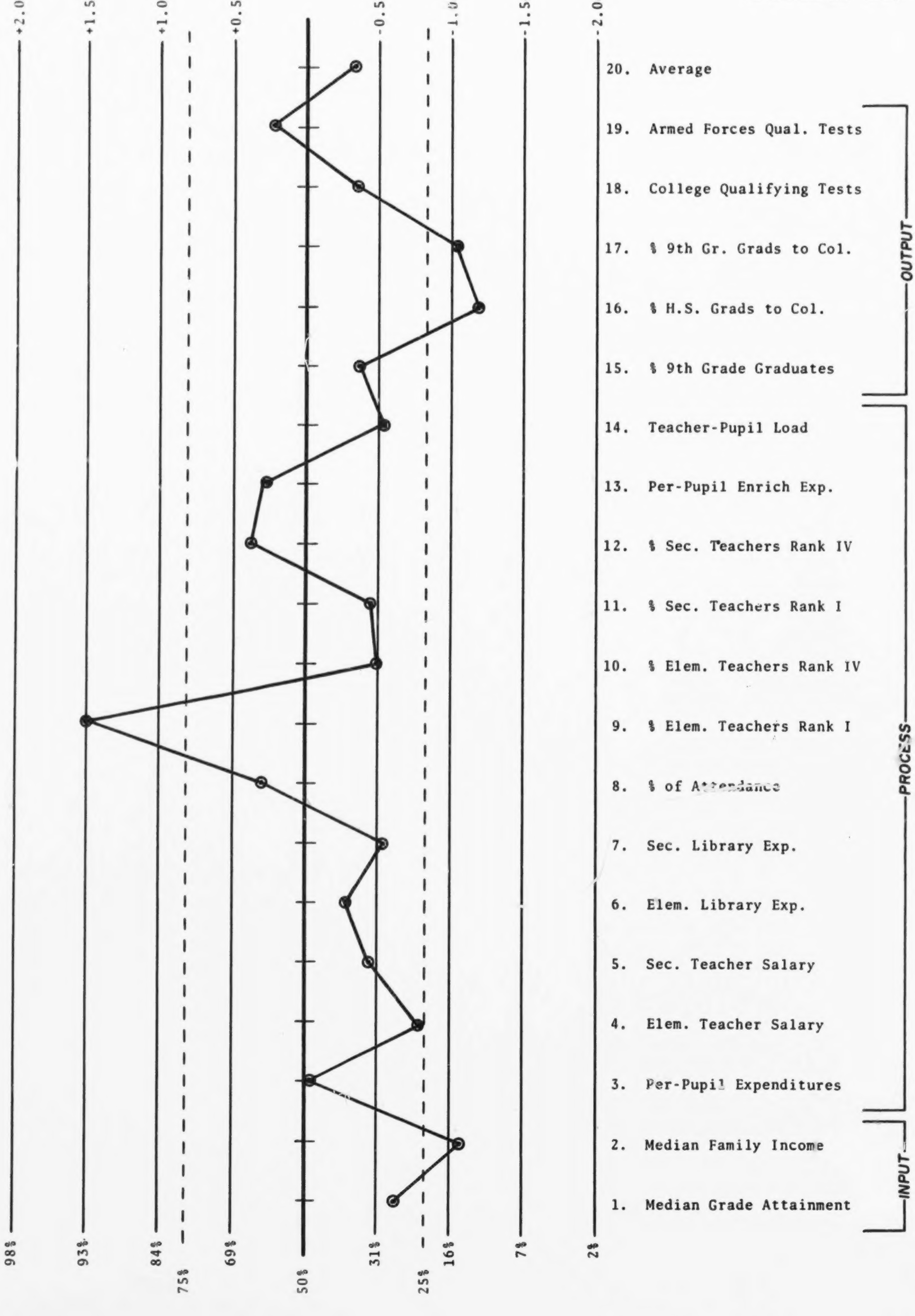
BUTLER CO.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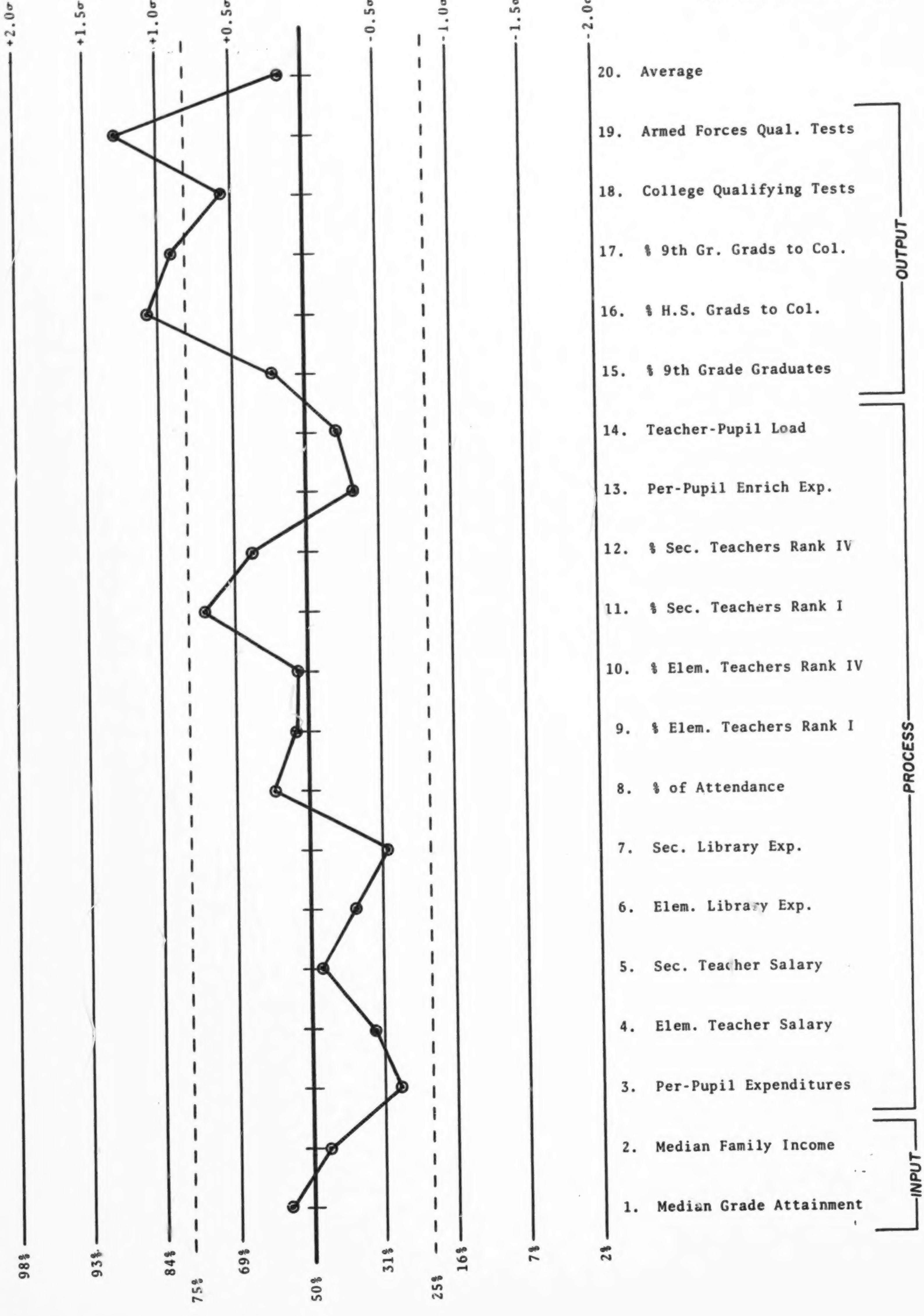
CALDWELL CO.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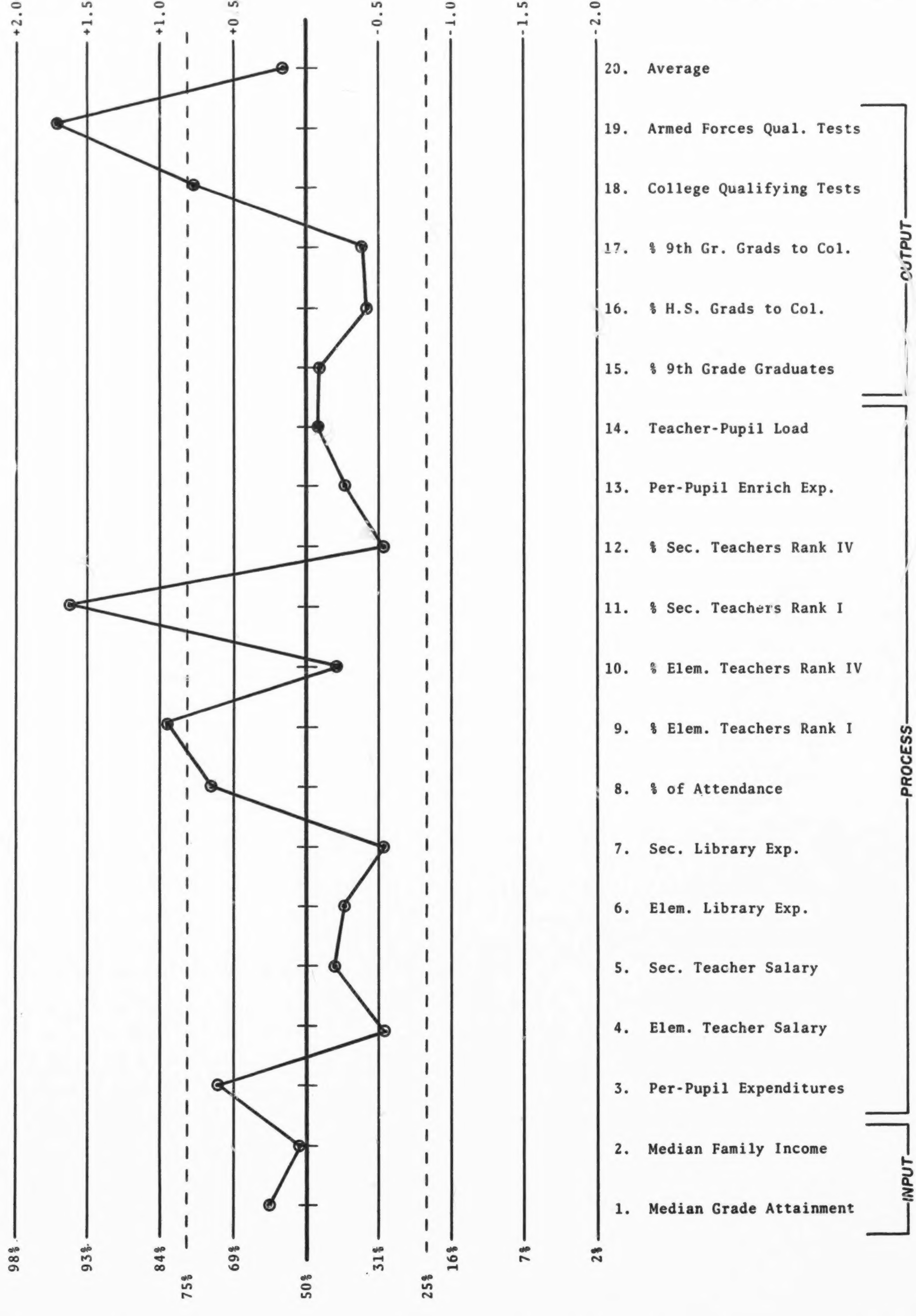
CALLOWAY CO.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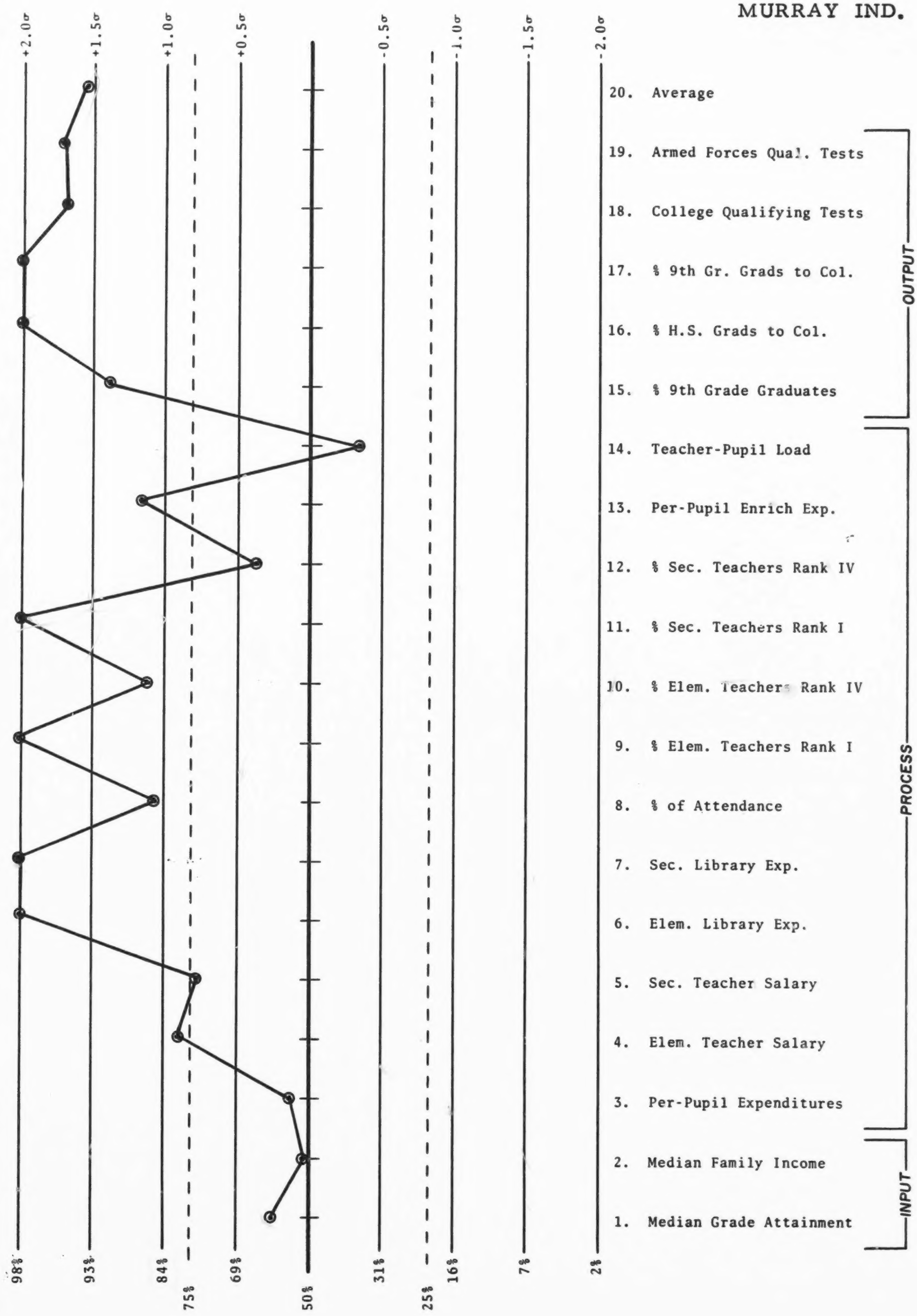
MURRAY IND.



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2. Median Family Income
1. Median Grade Attainment
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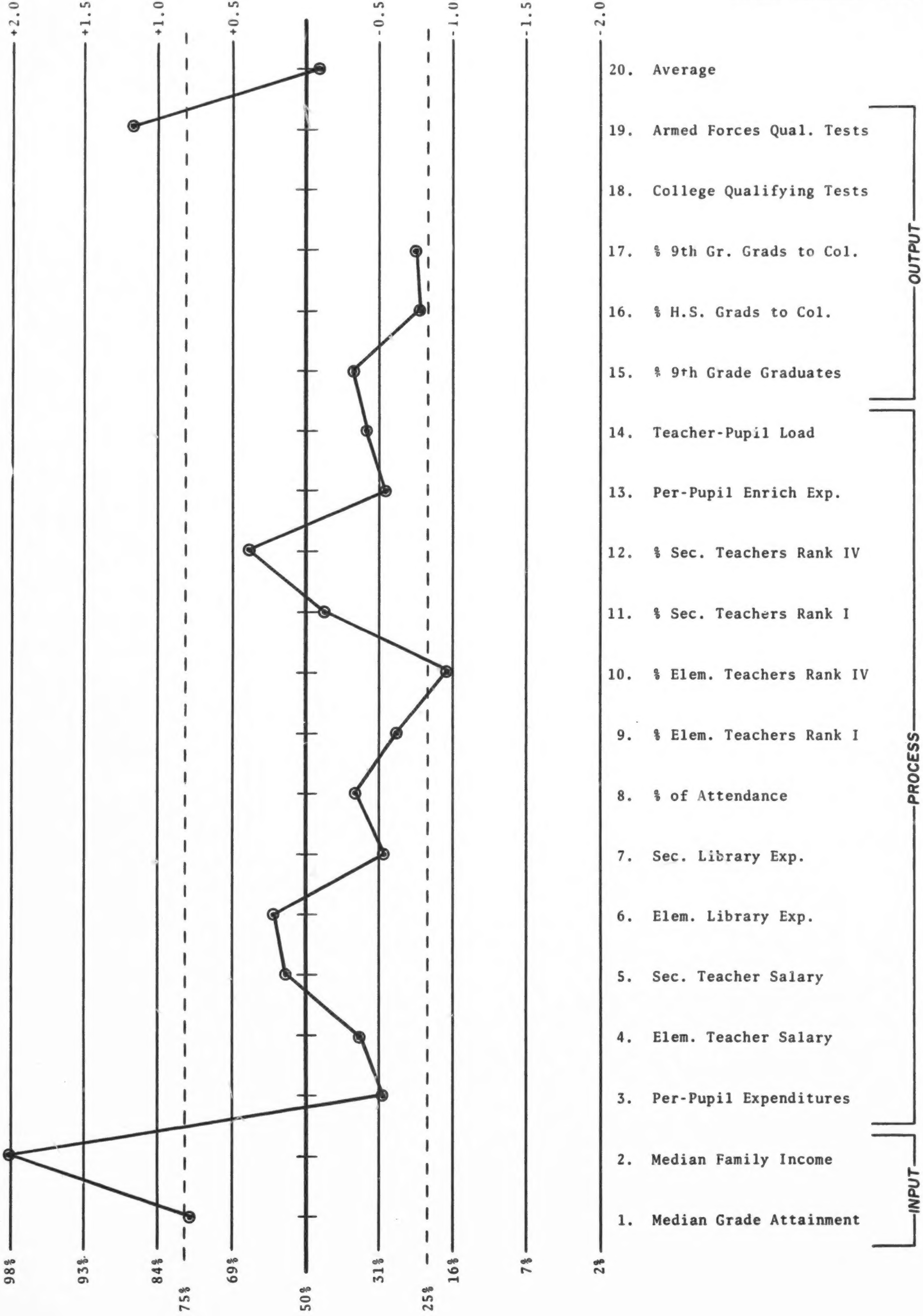
CAMPBELL CO.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1. Median Grade Attainment
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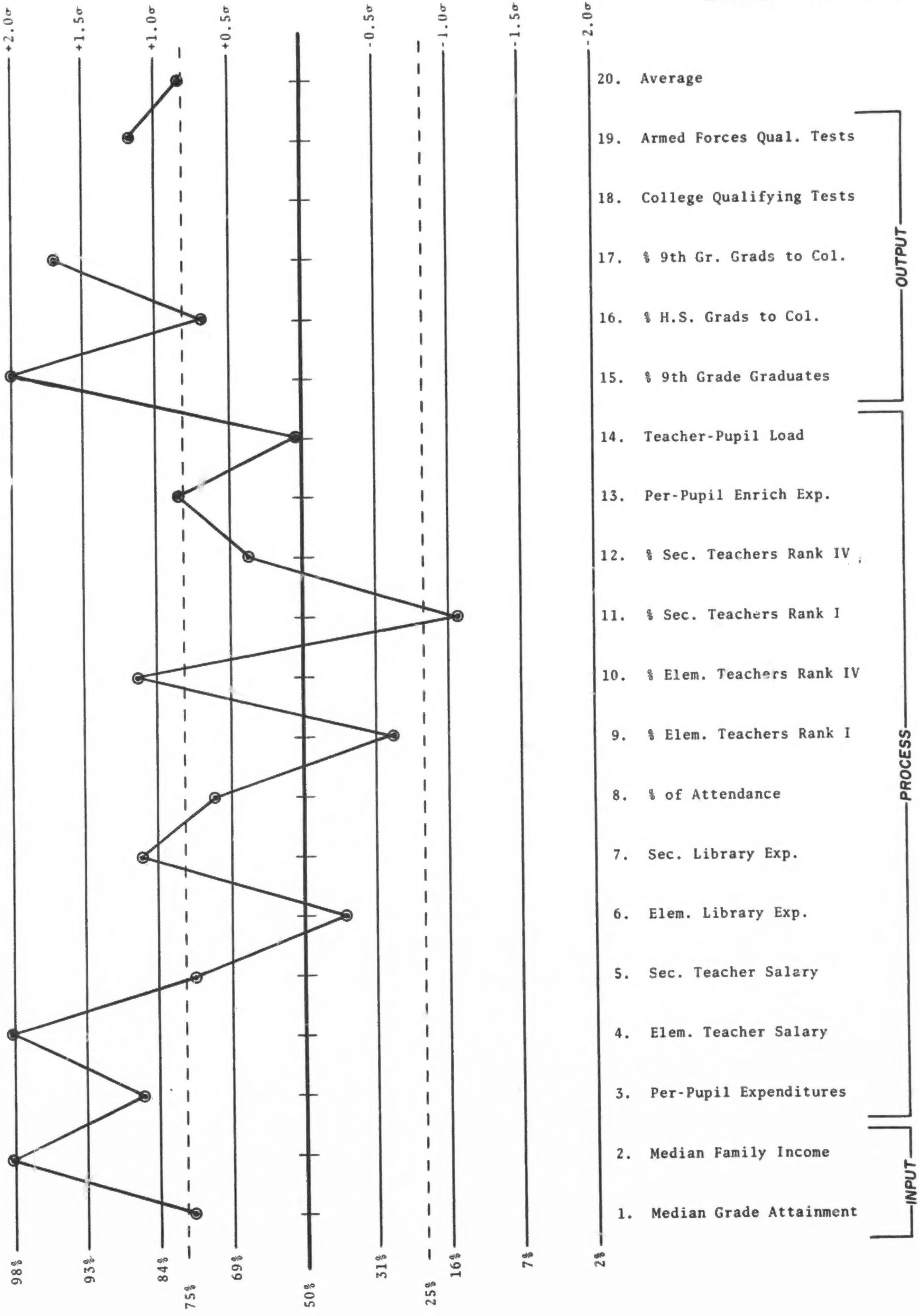
BELLEVUE IND.



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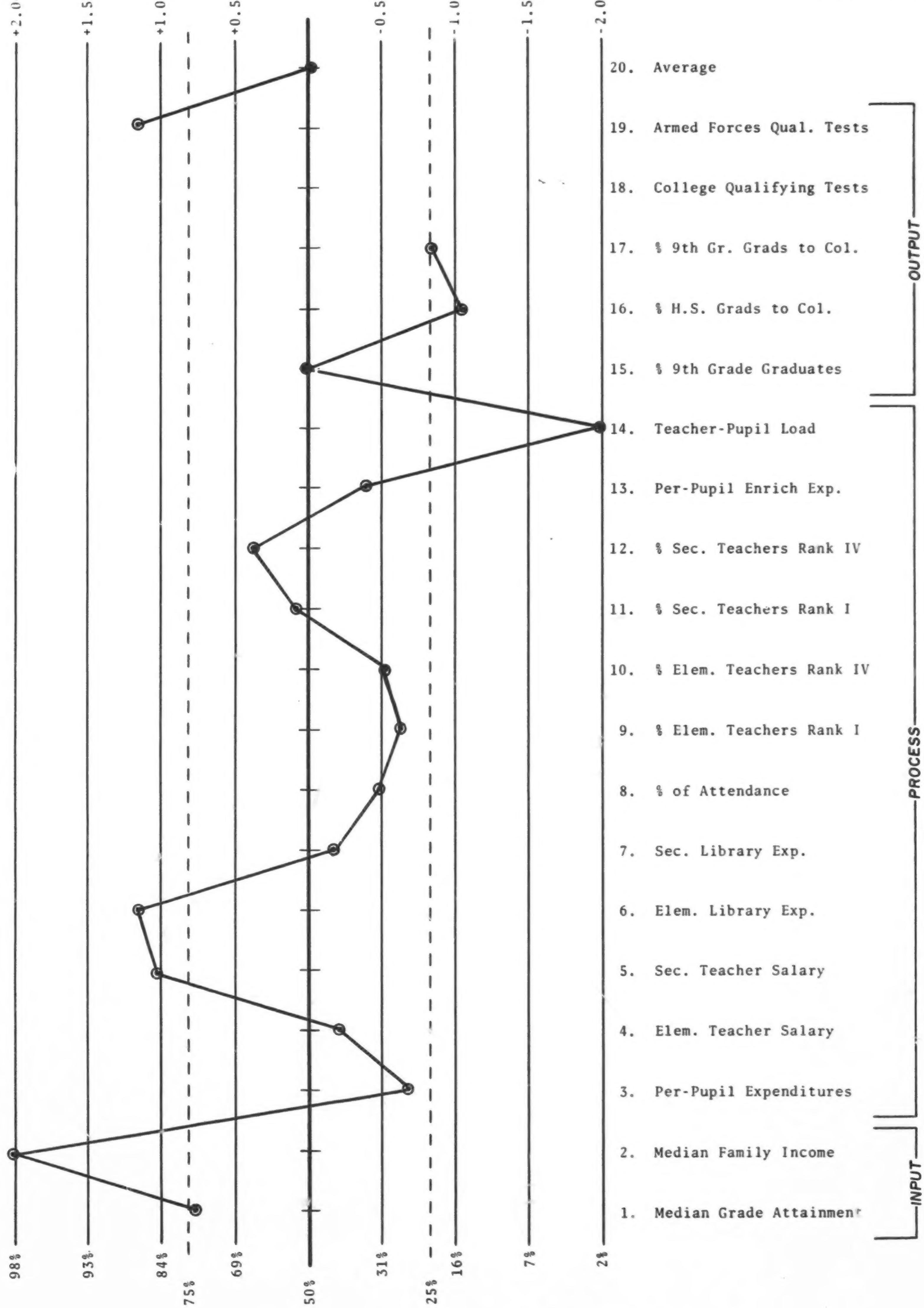

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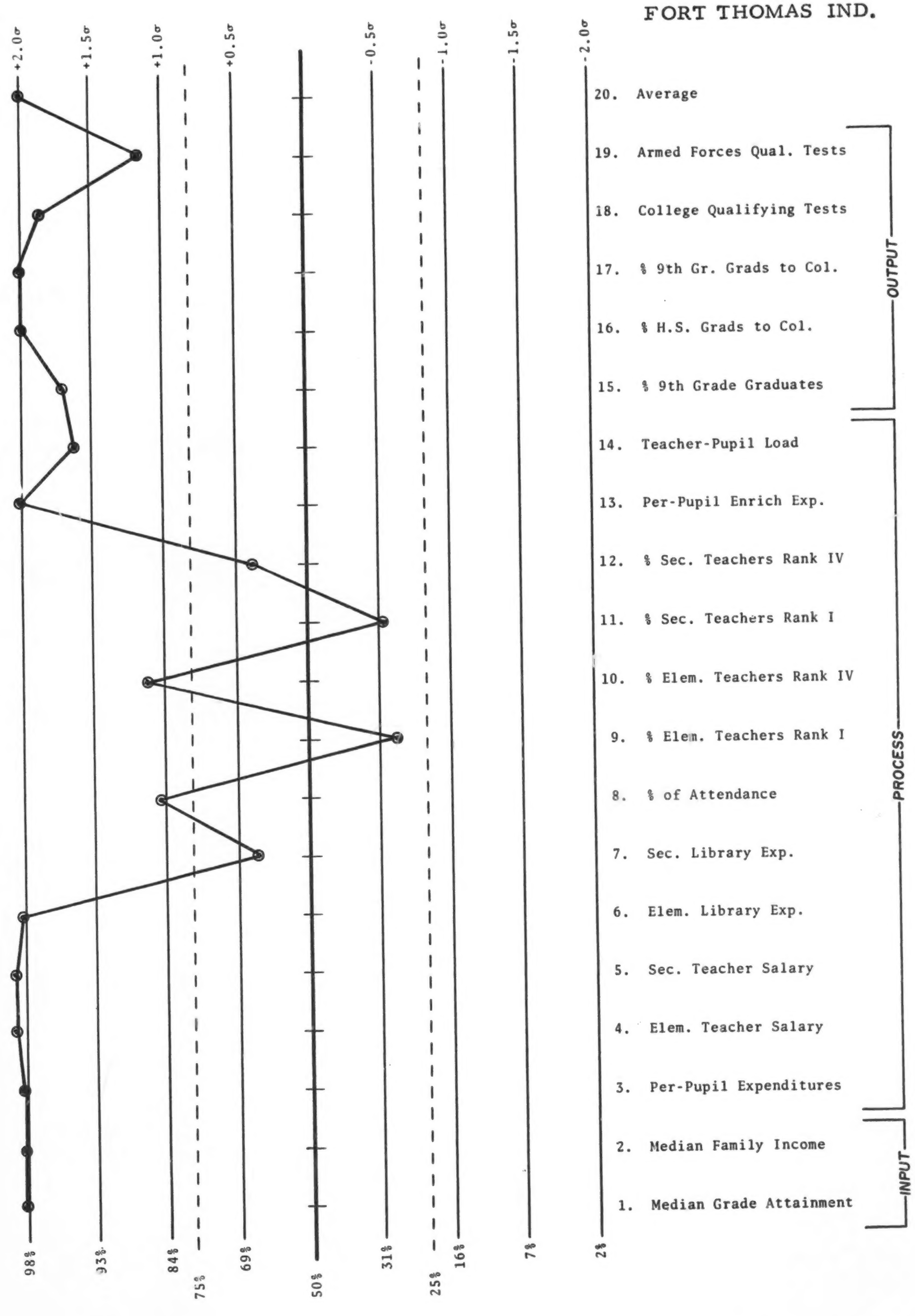
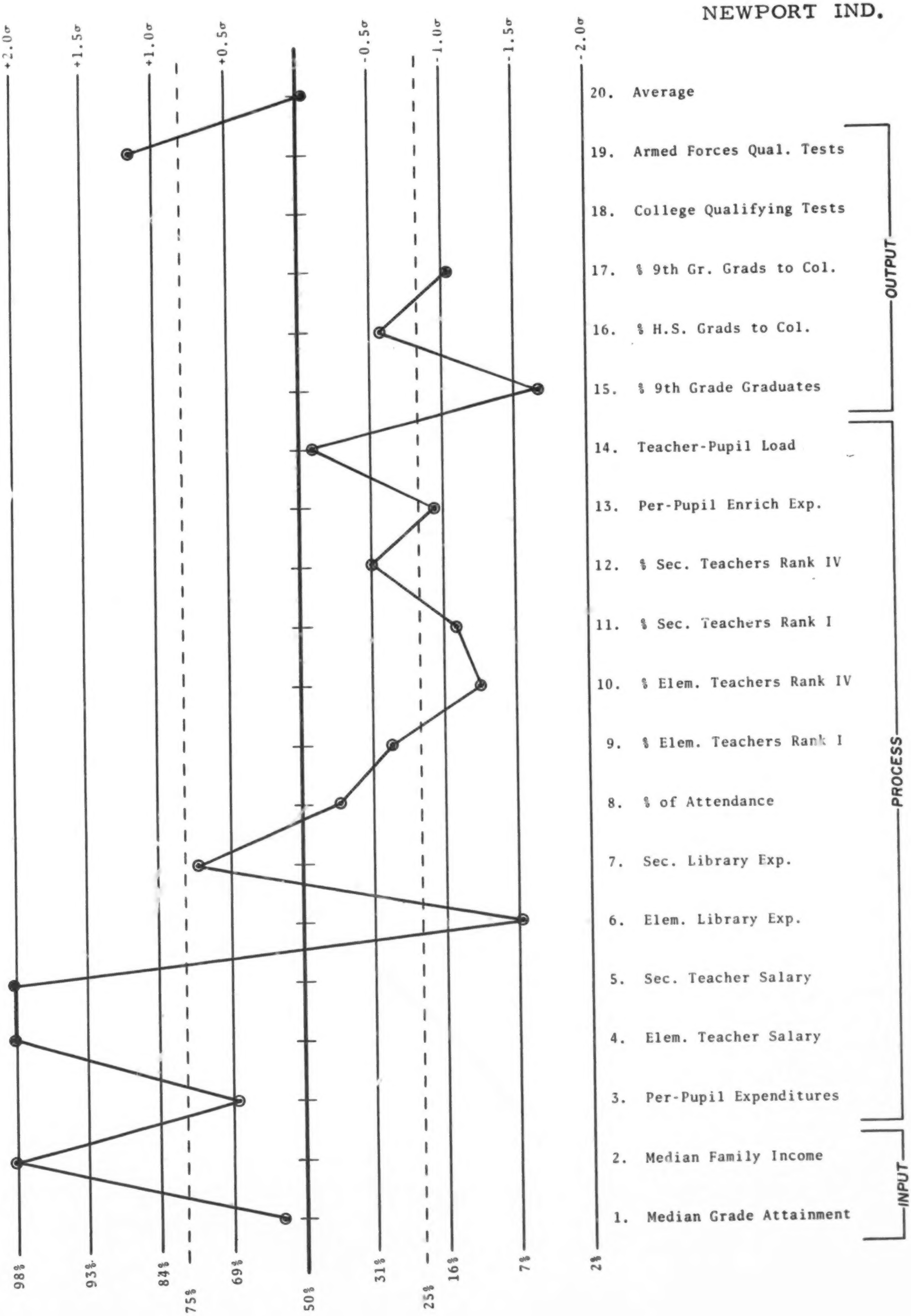
FORT THOMAS IND.



NEWPORT IND.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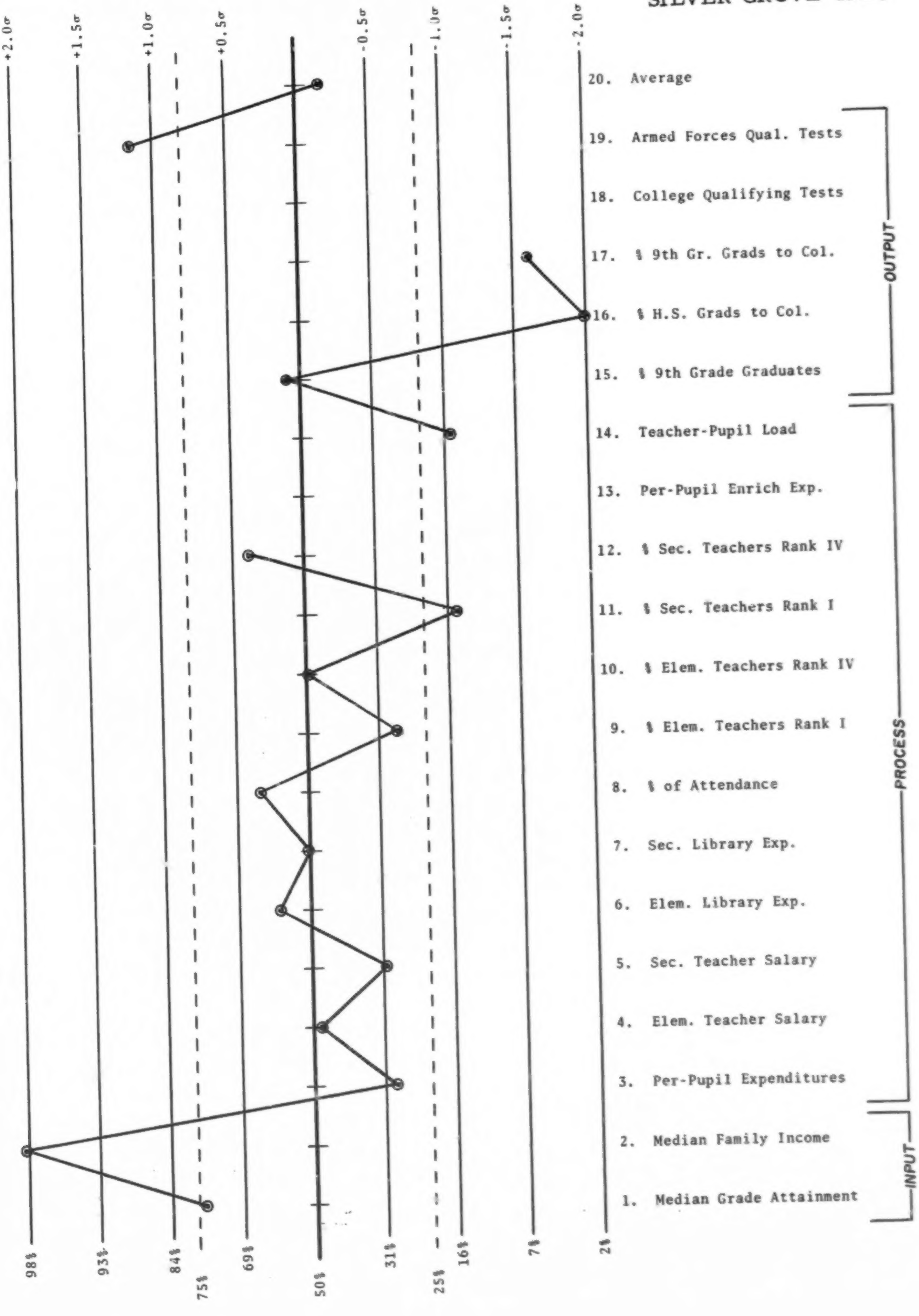
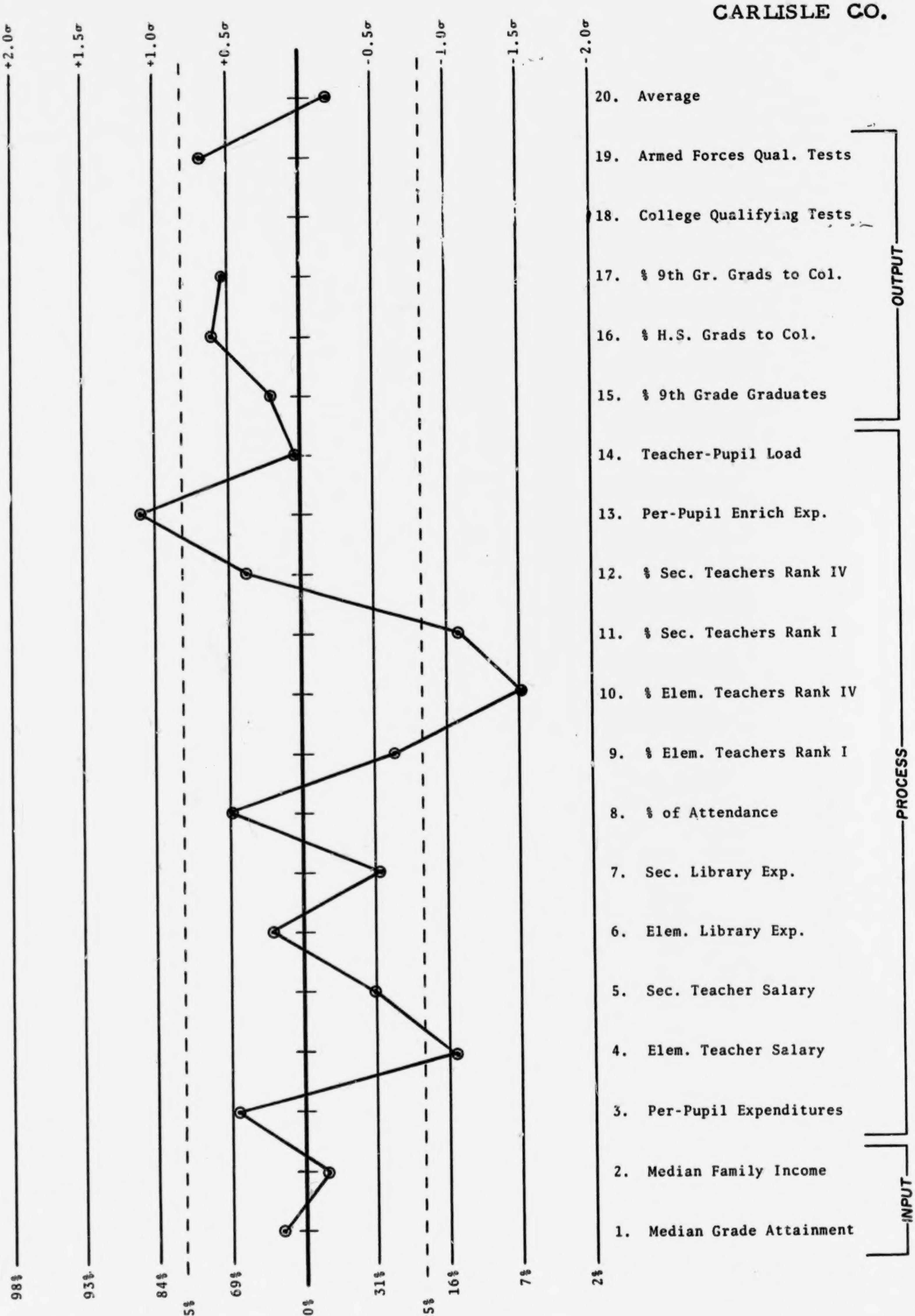
SILVER GROVE IND.



CARLISLE CO.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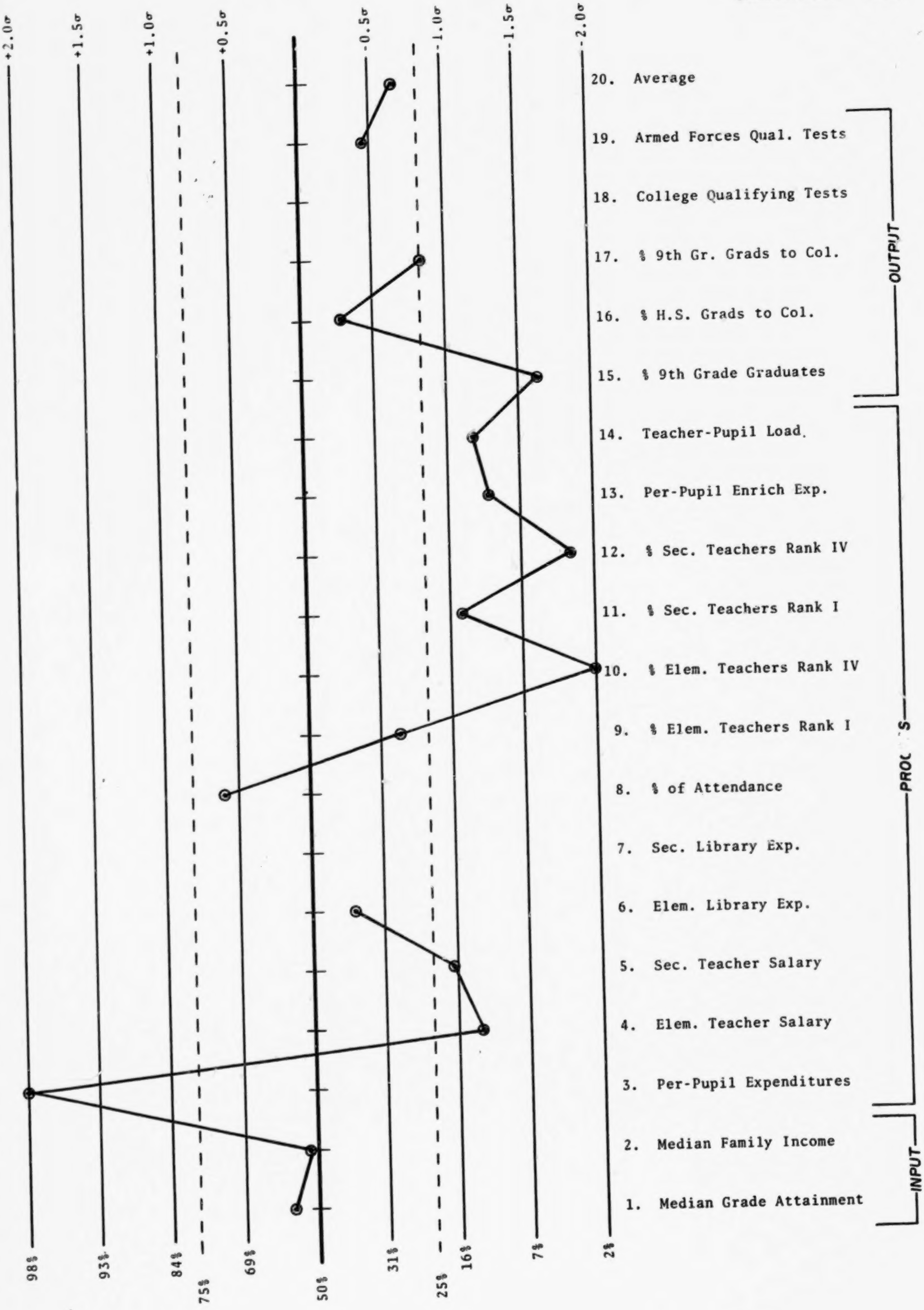
CARROLL CO.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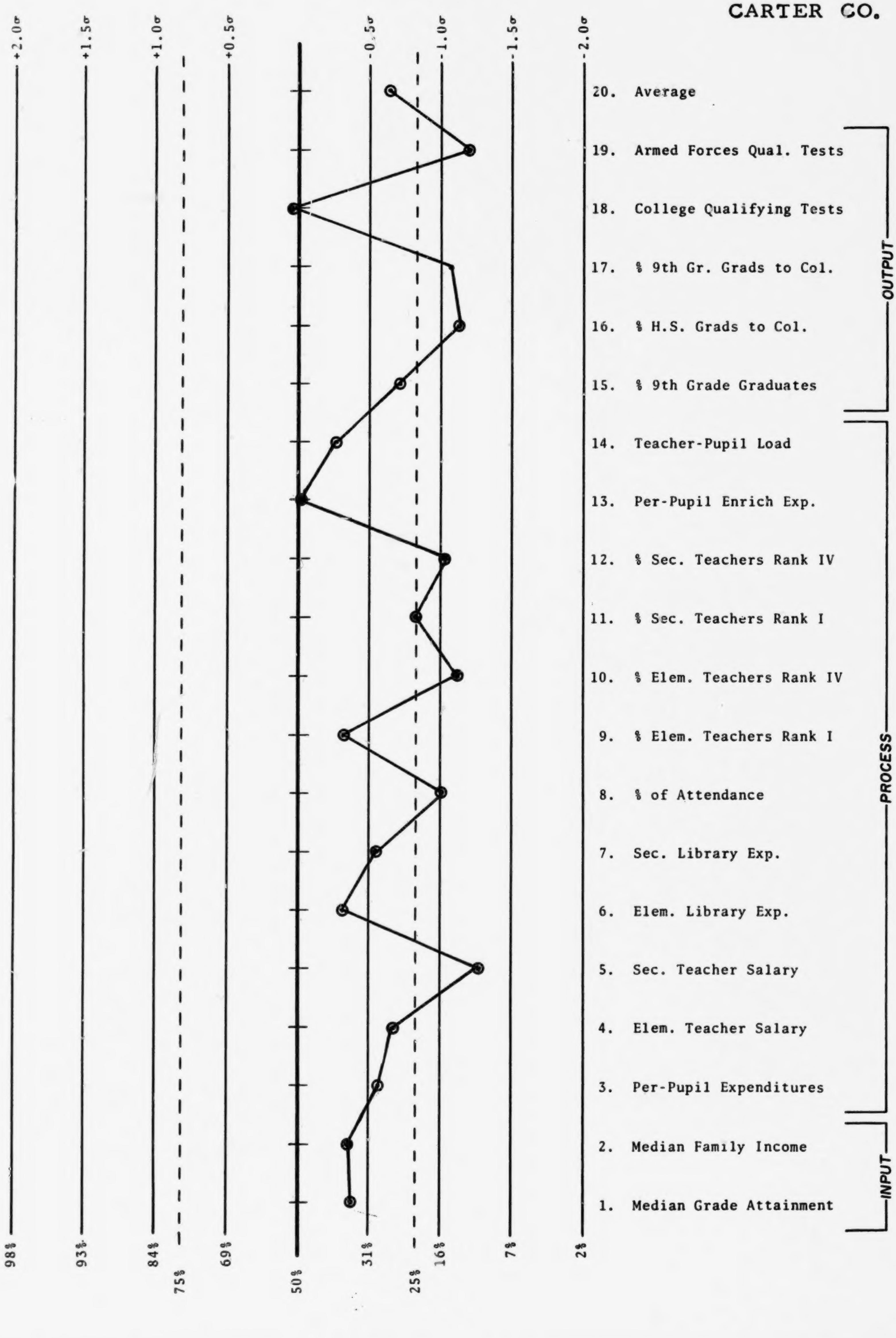
CARTER CO.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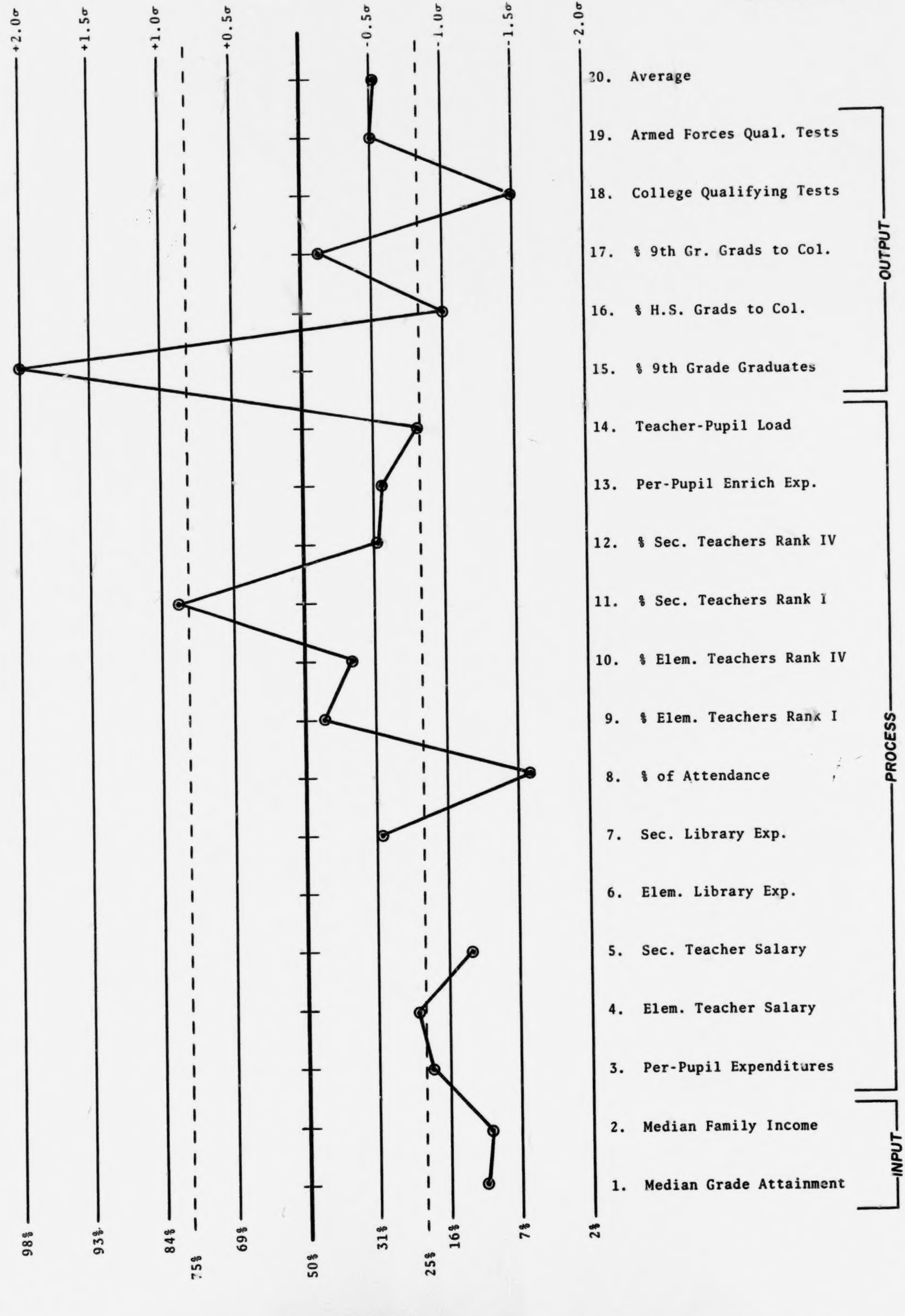
CASEY CO.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20. Average
19. Armed Forces Qual. Tests
18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
OUTPUT
PROCESS
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98%
93%
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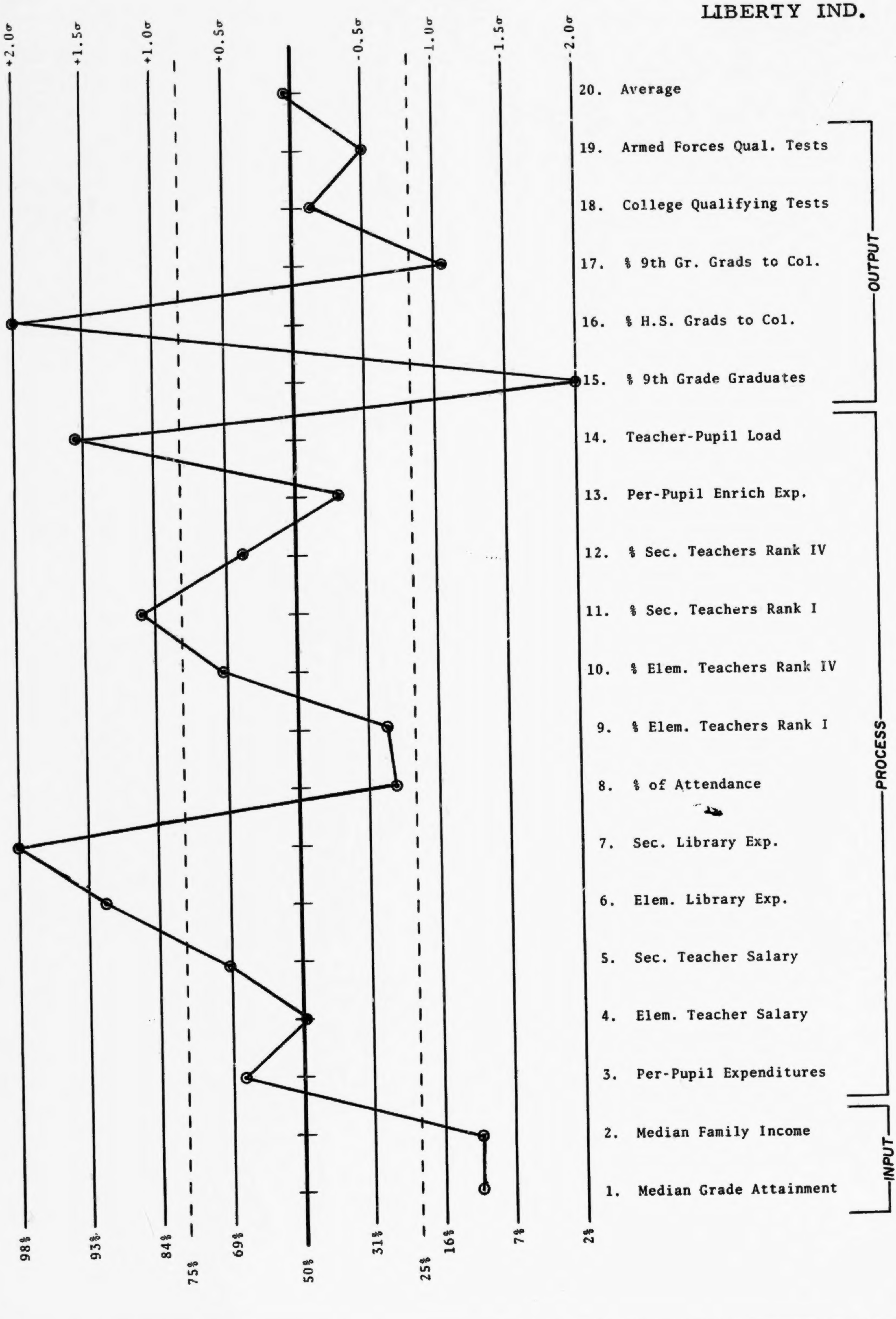
LIBERTY IND.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18. College Qualifying Tests
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16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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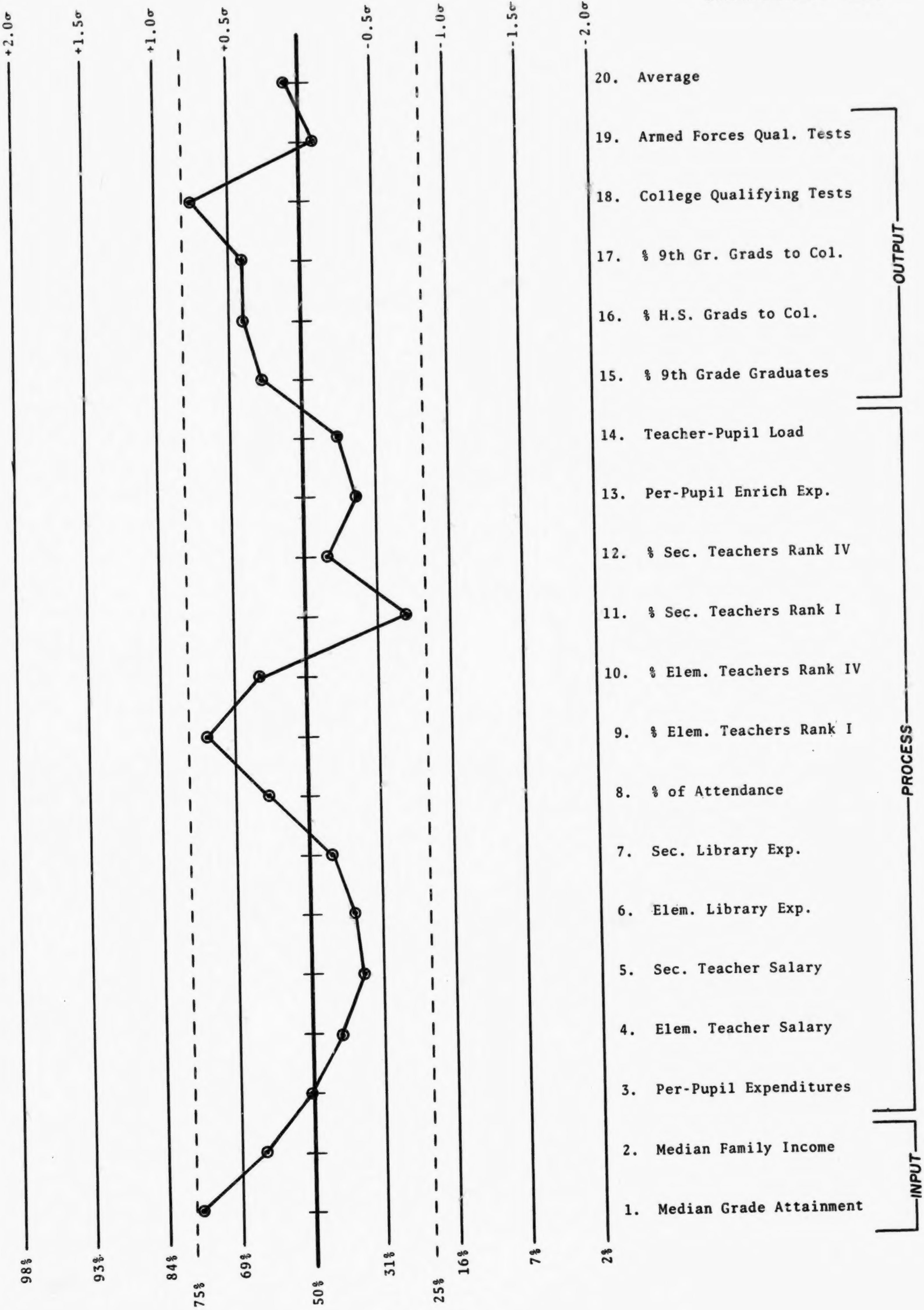
CHRISTIAN CO.



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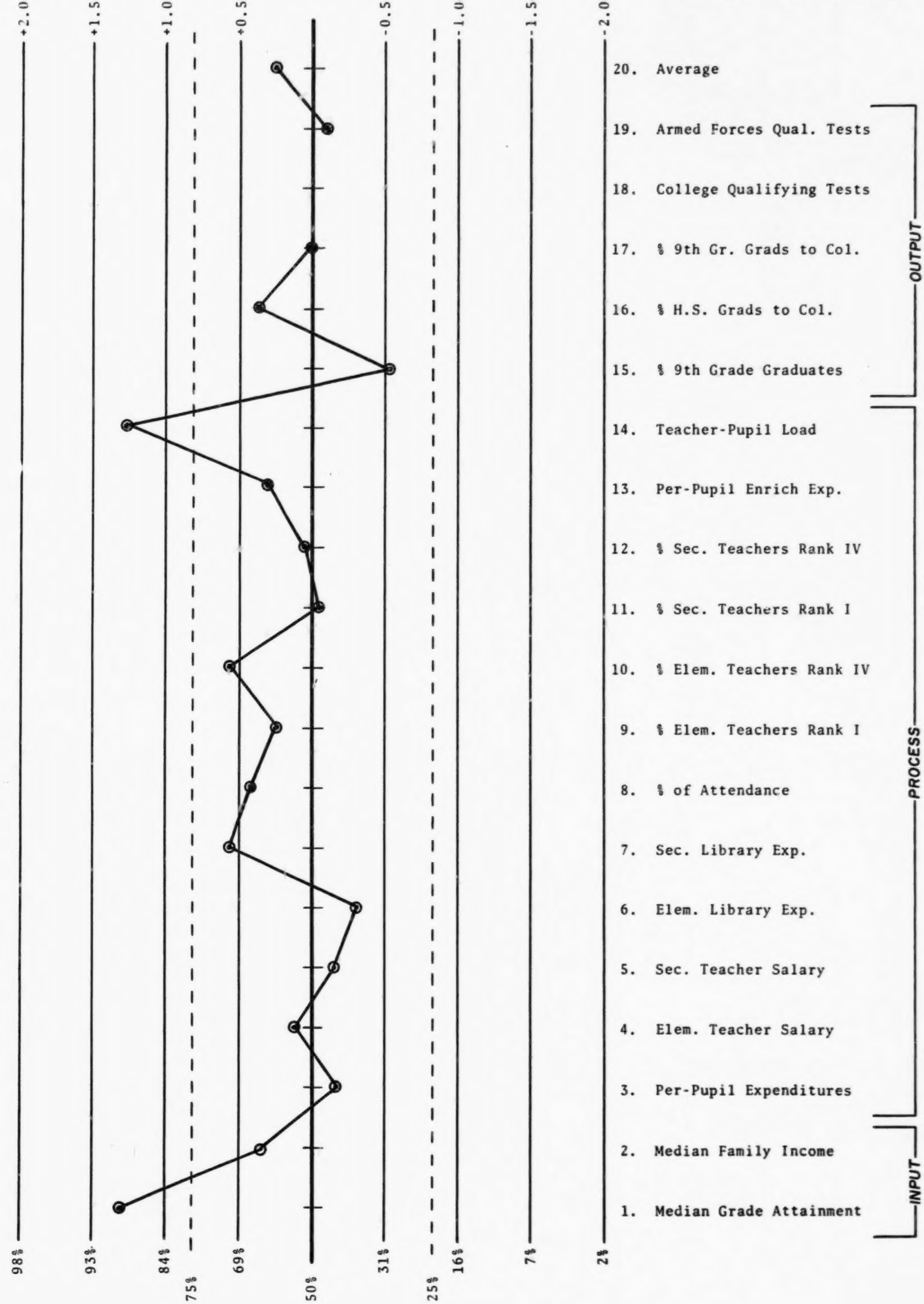

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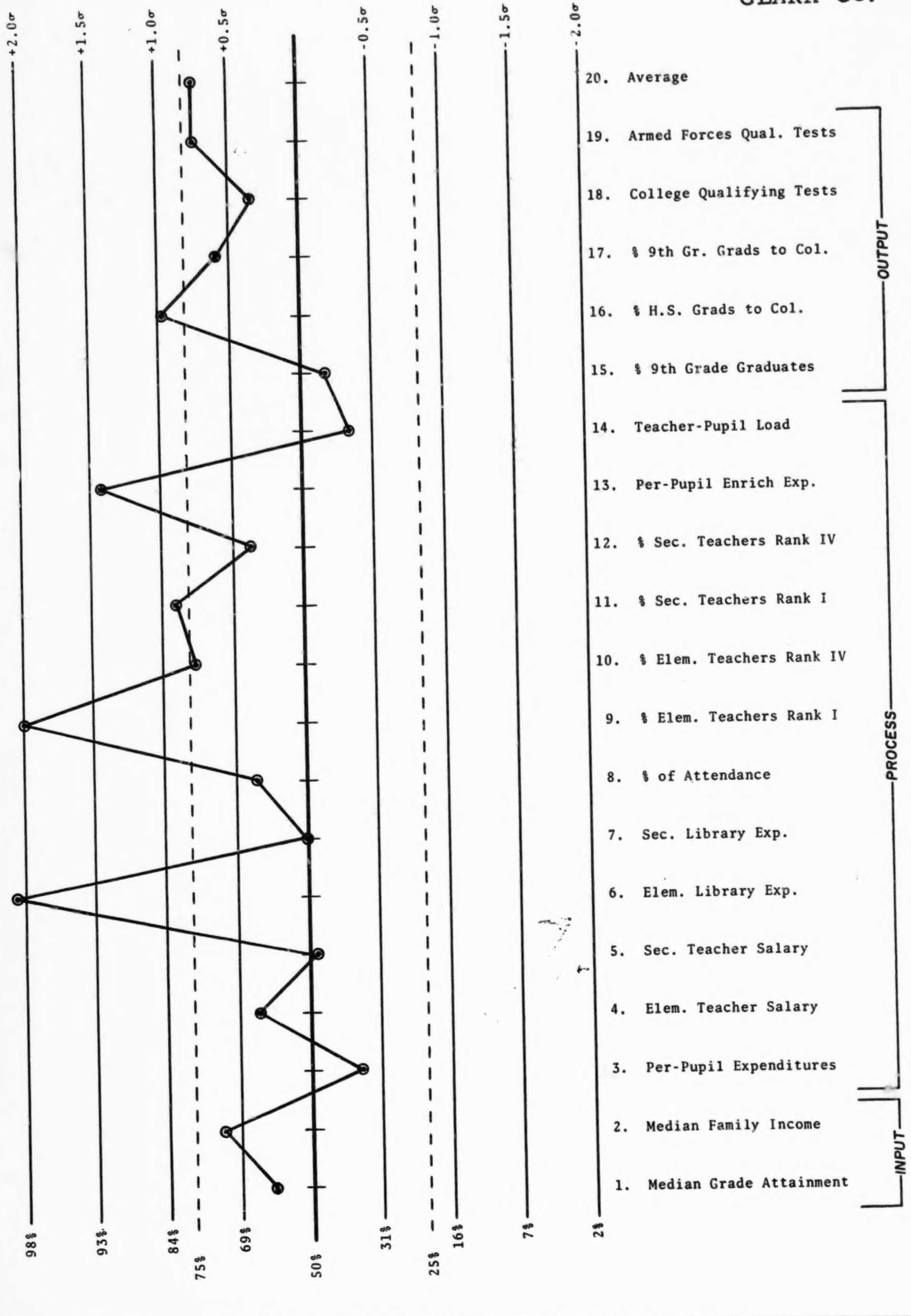
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20. Average
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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
OUTPUT
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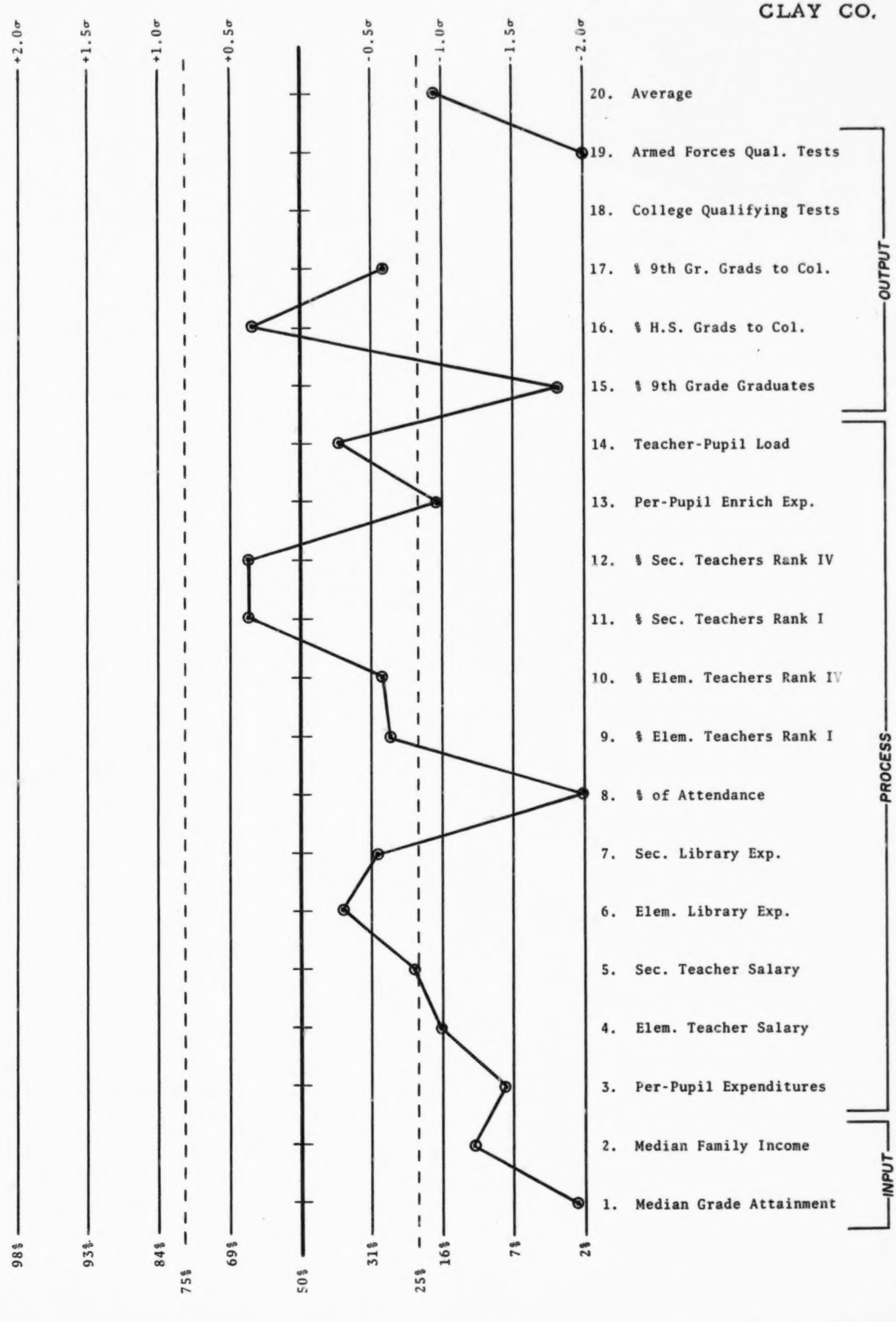
CLAY CO.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18. College Qualifying Tests
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15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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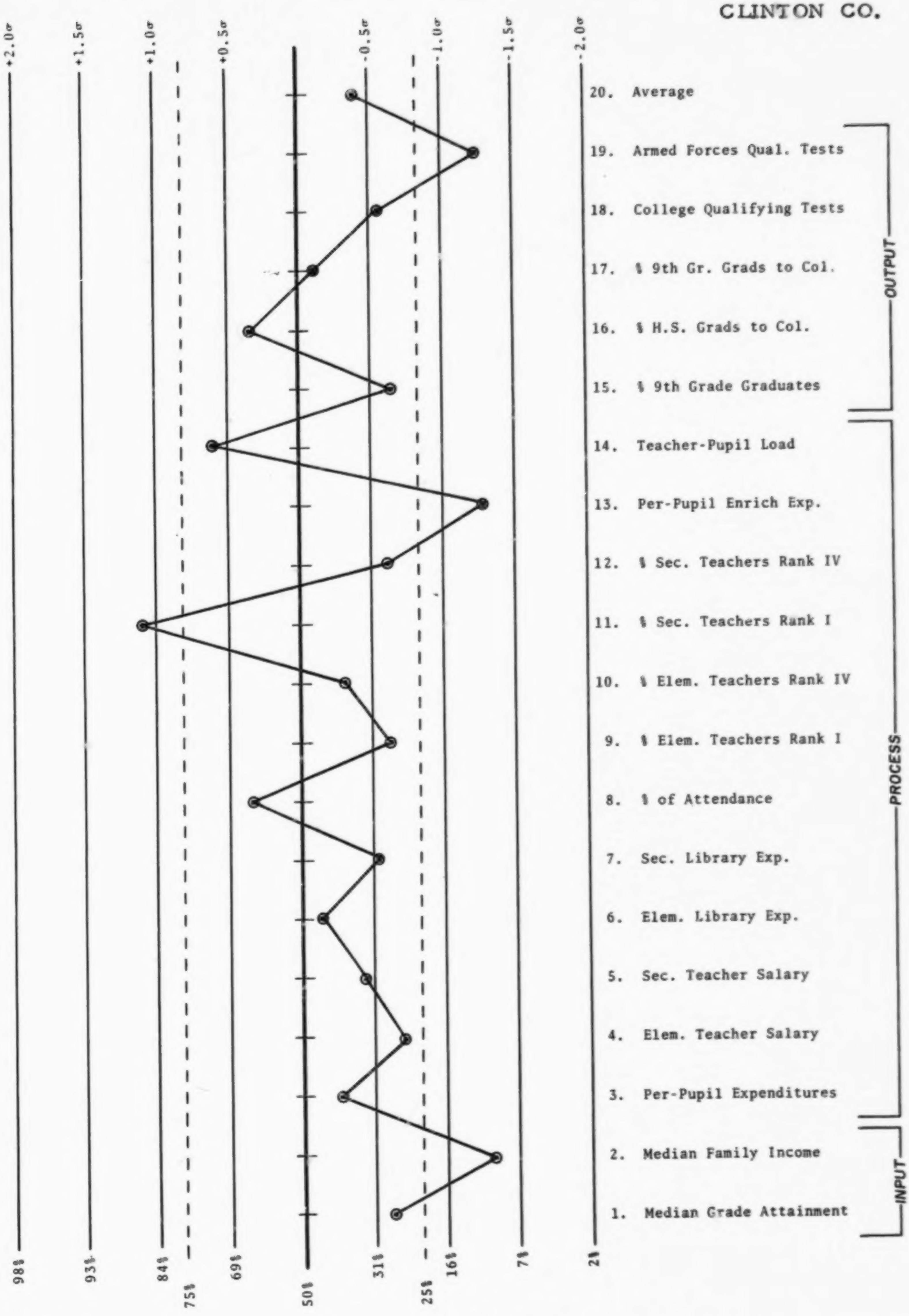
CLINTON CO.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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
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14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
PROCESS
2. Median Family Income
1. Median Grade Attainment
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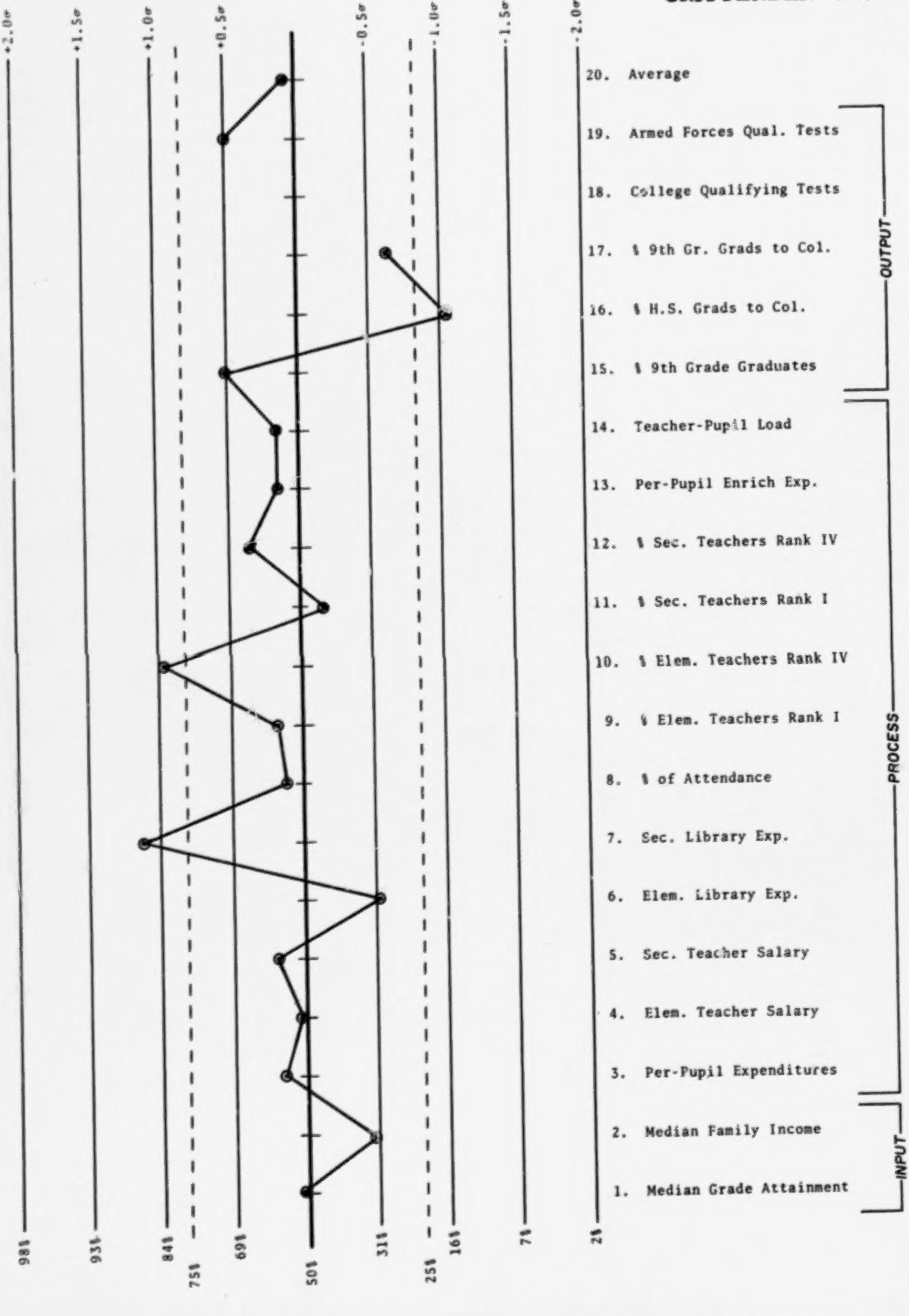
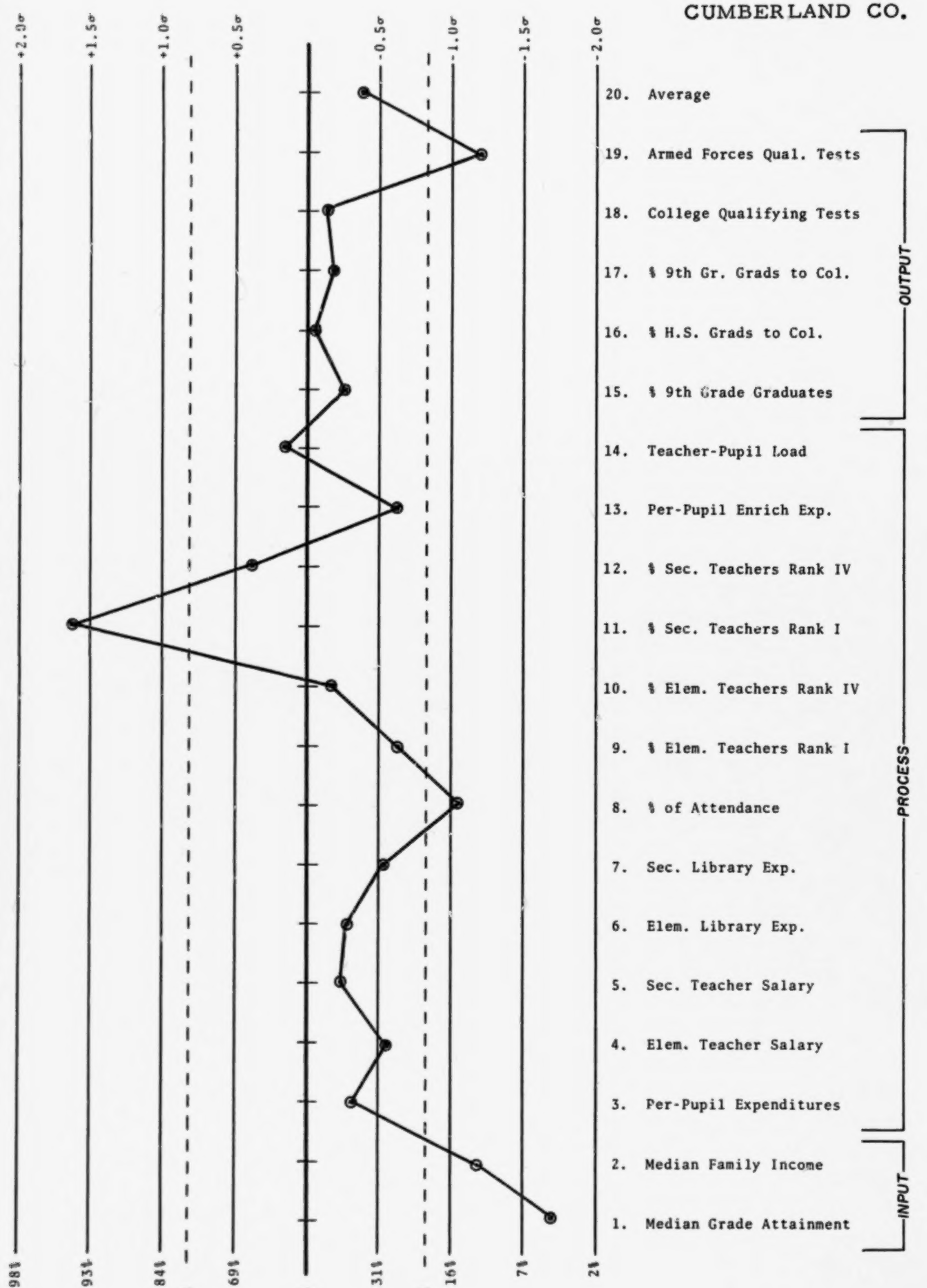
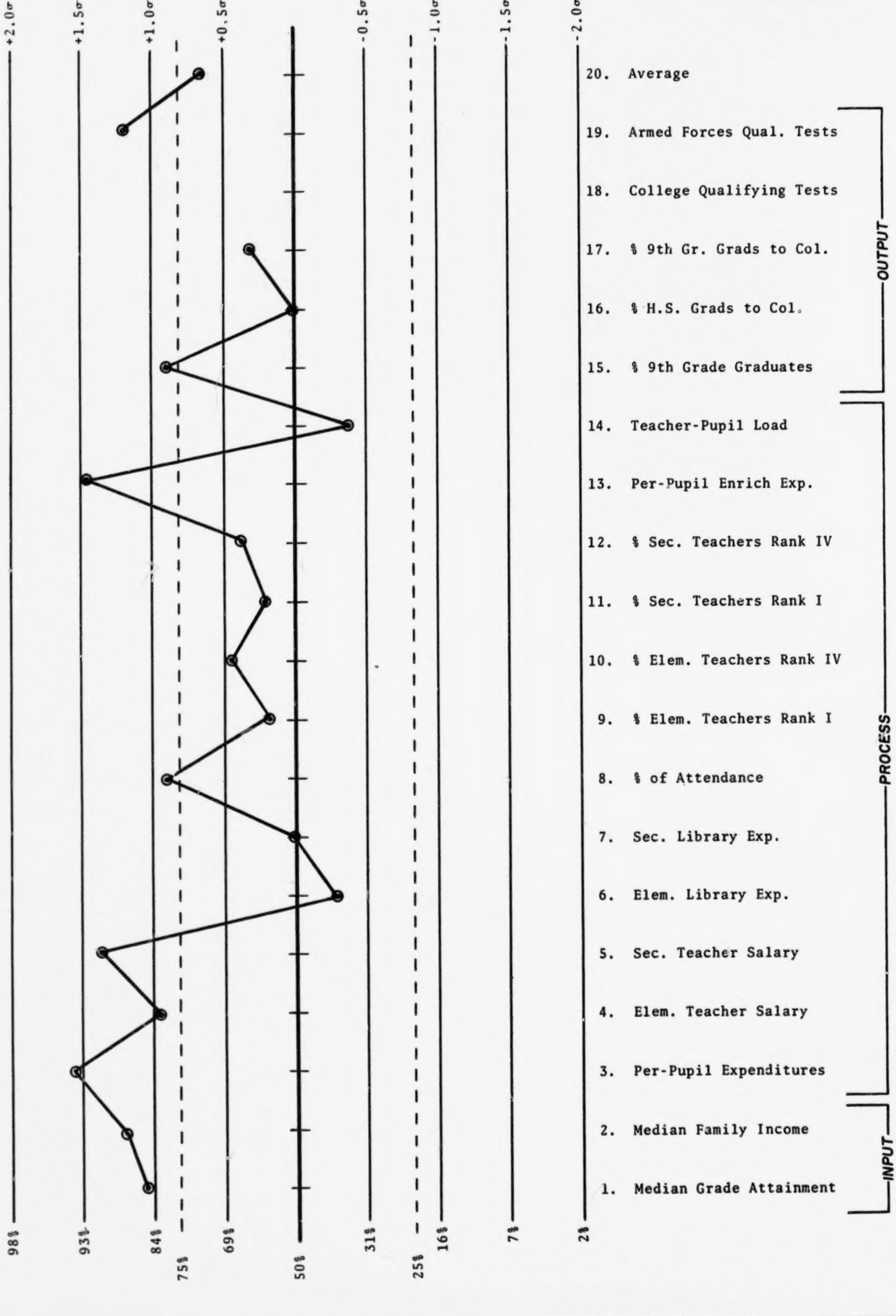
CRITTENDEN CO.



CUMBERLAND CO.



DAVIESS CO.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18. College Qualifying Tests
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15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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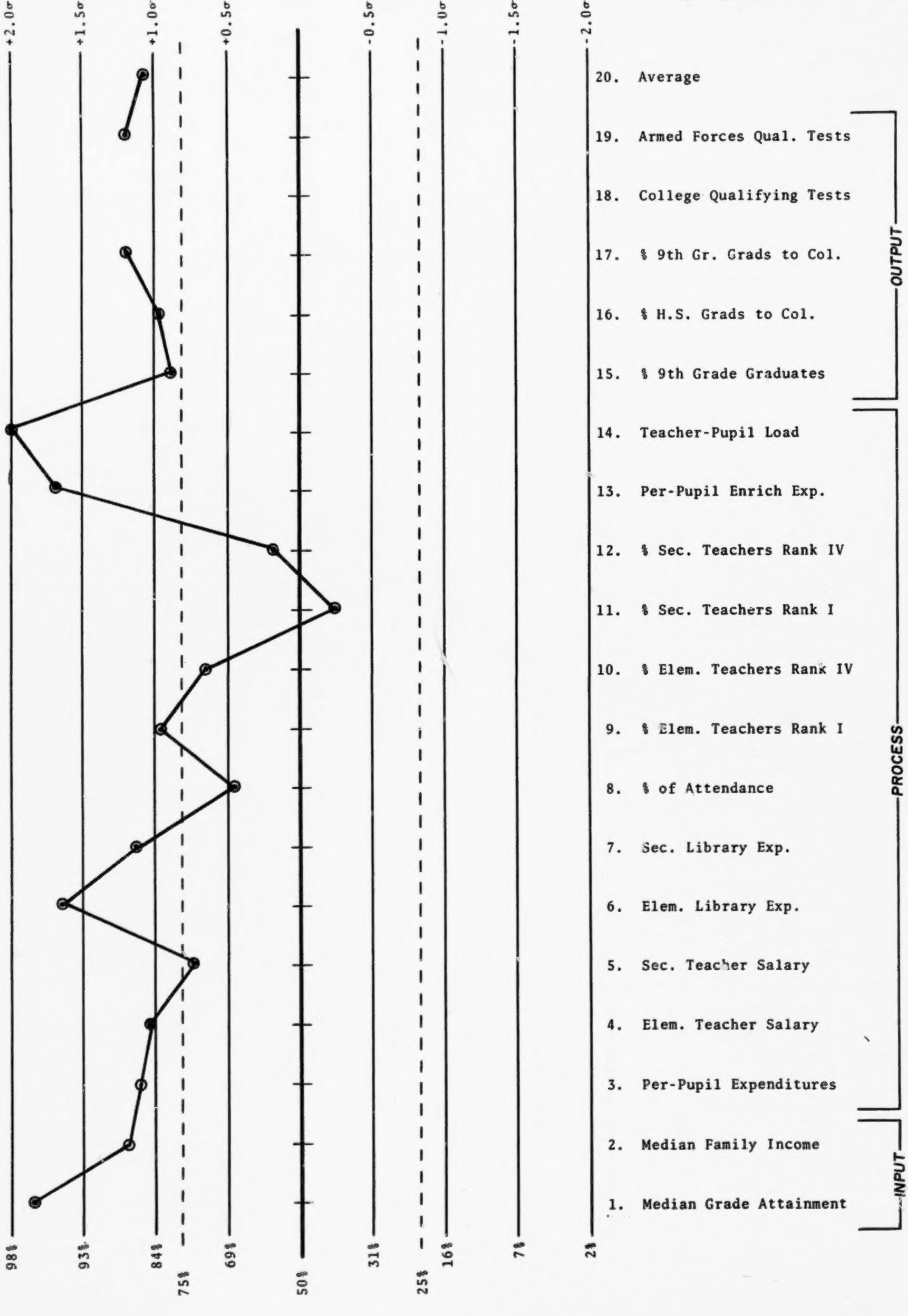
OWENSBORO IND.



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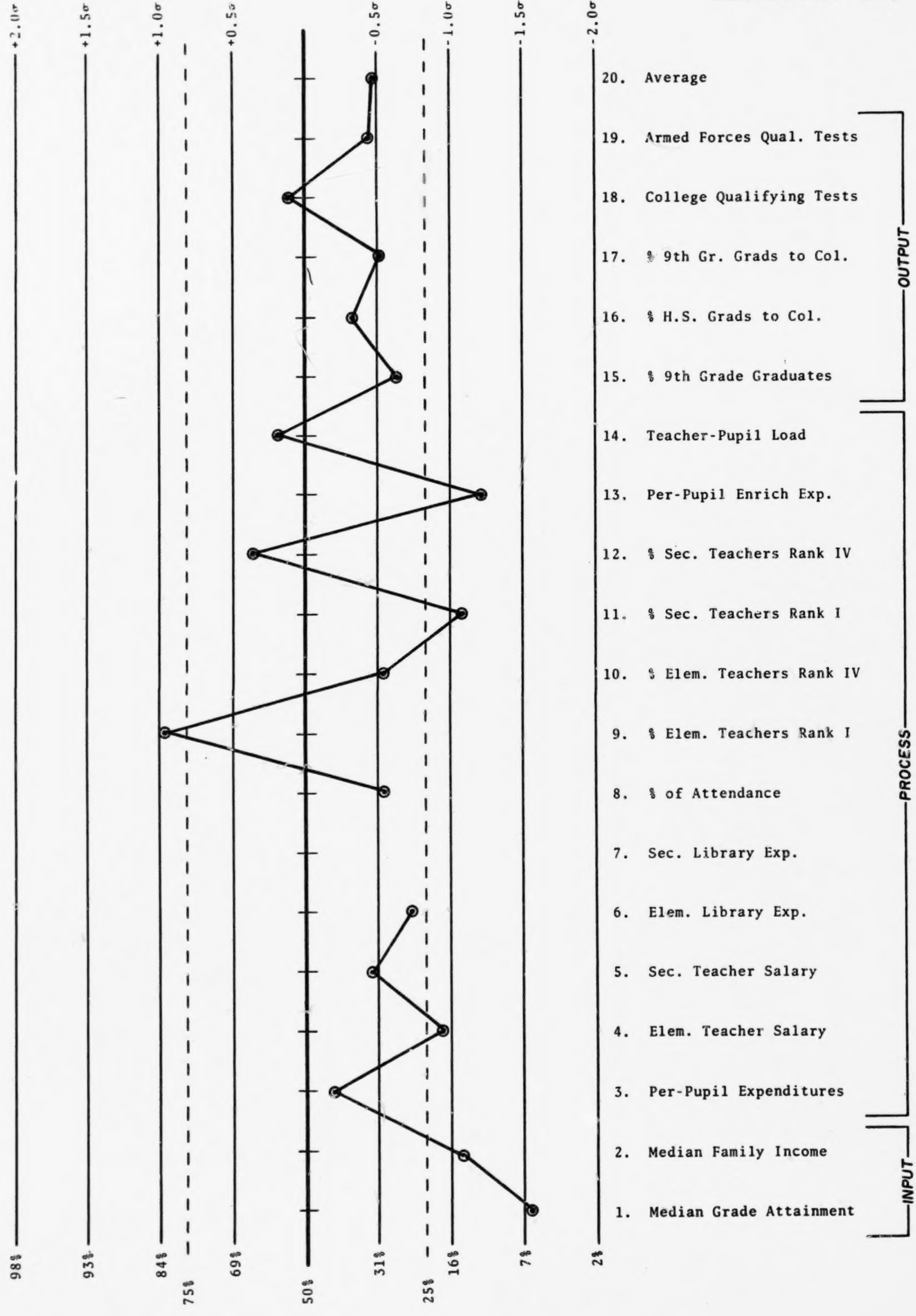
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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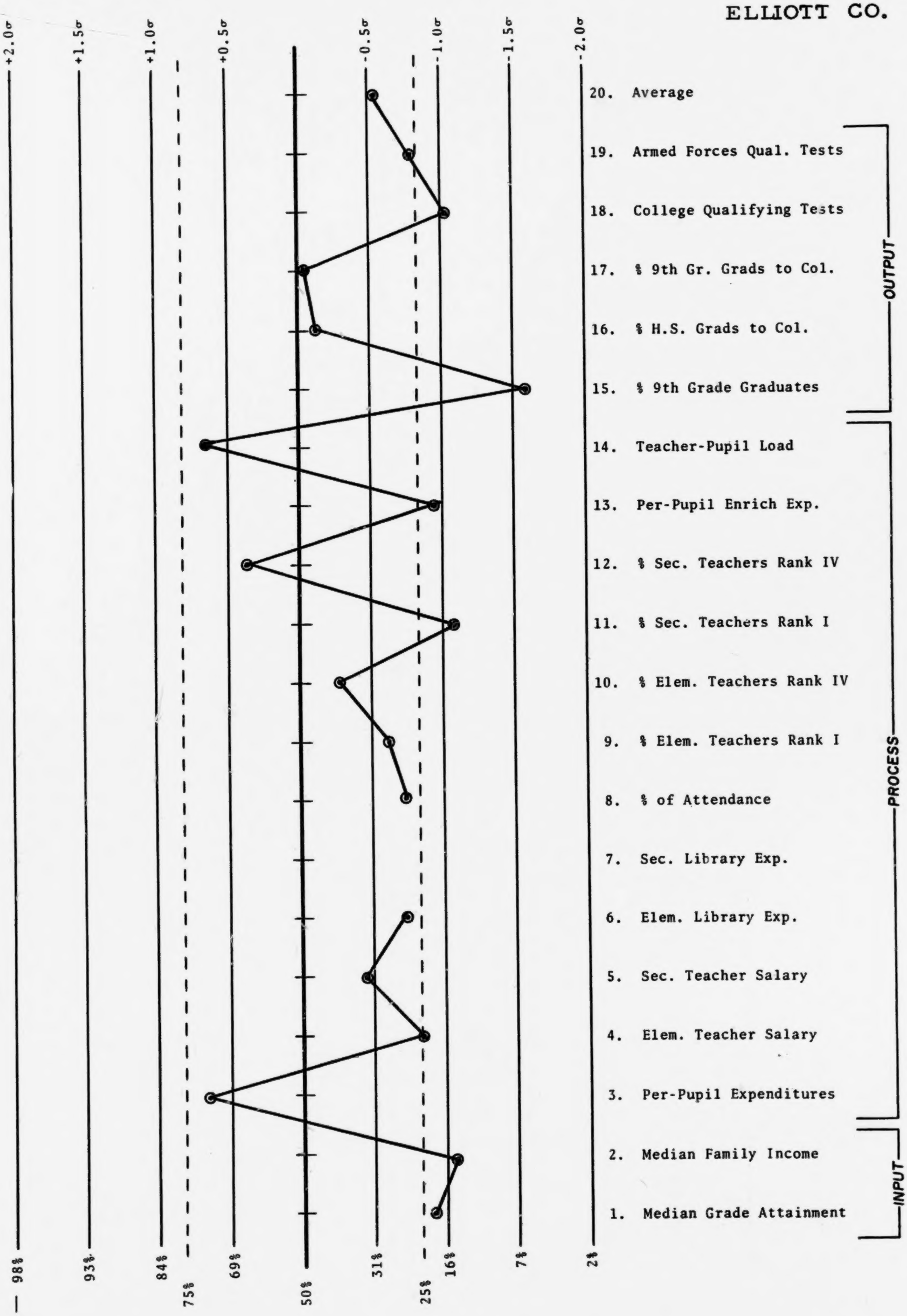
ELLIOTT CO.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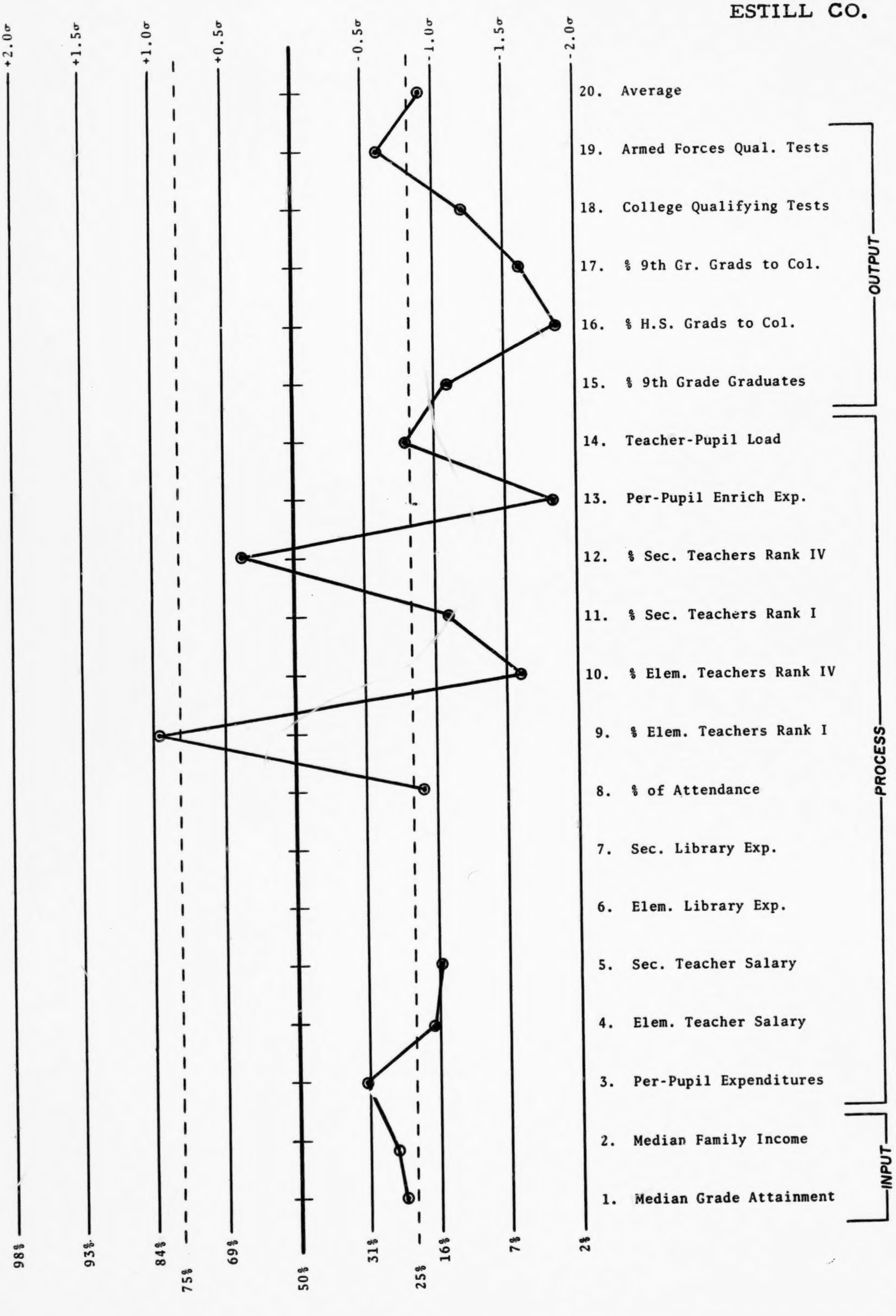
ESTILL CO.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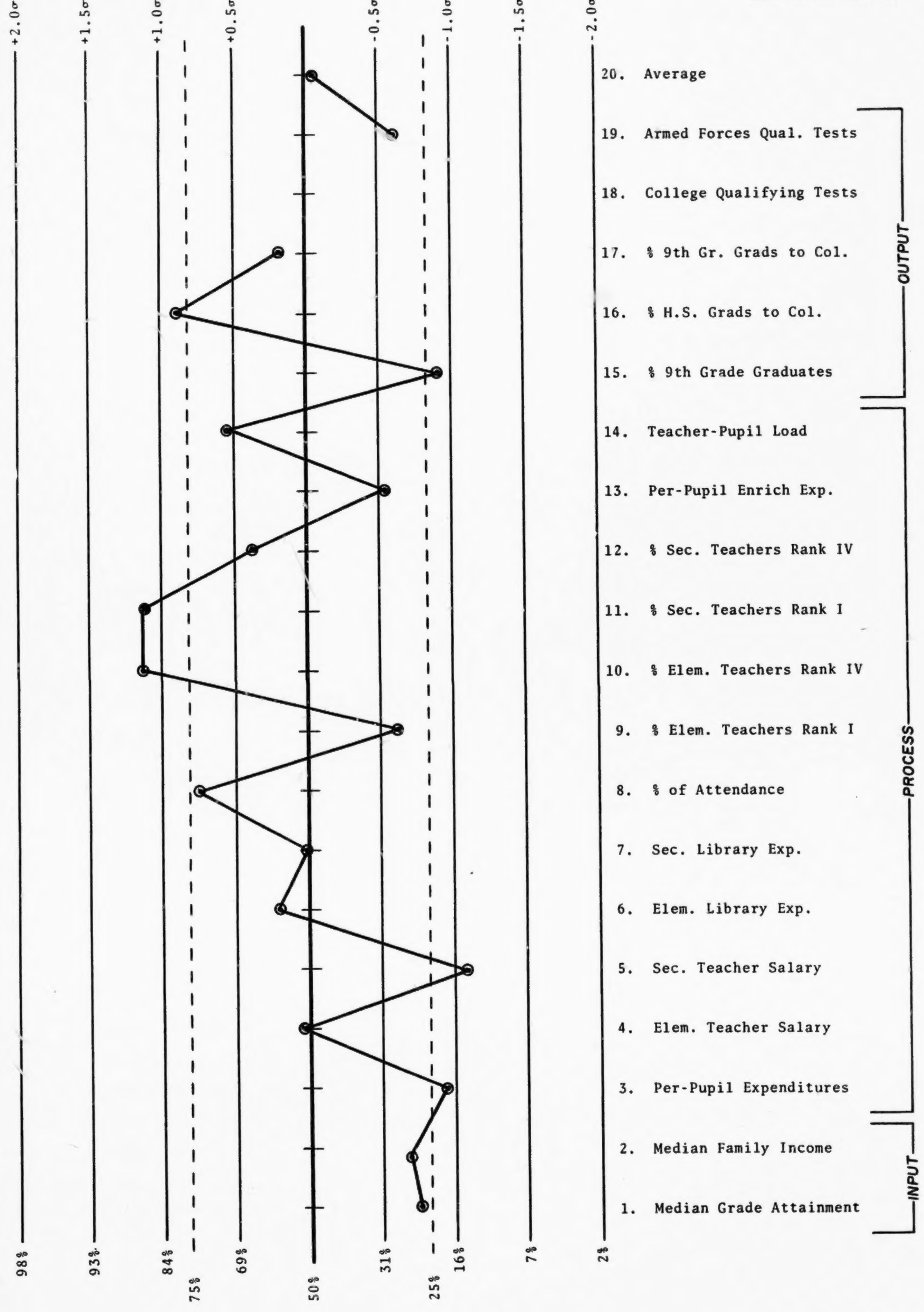
IRVINE IND.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2. Median Family Income
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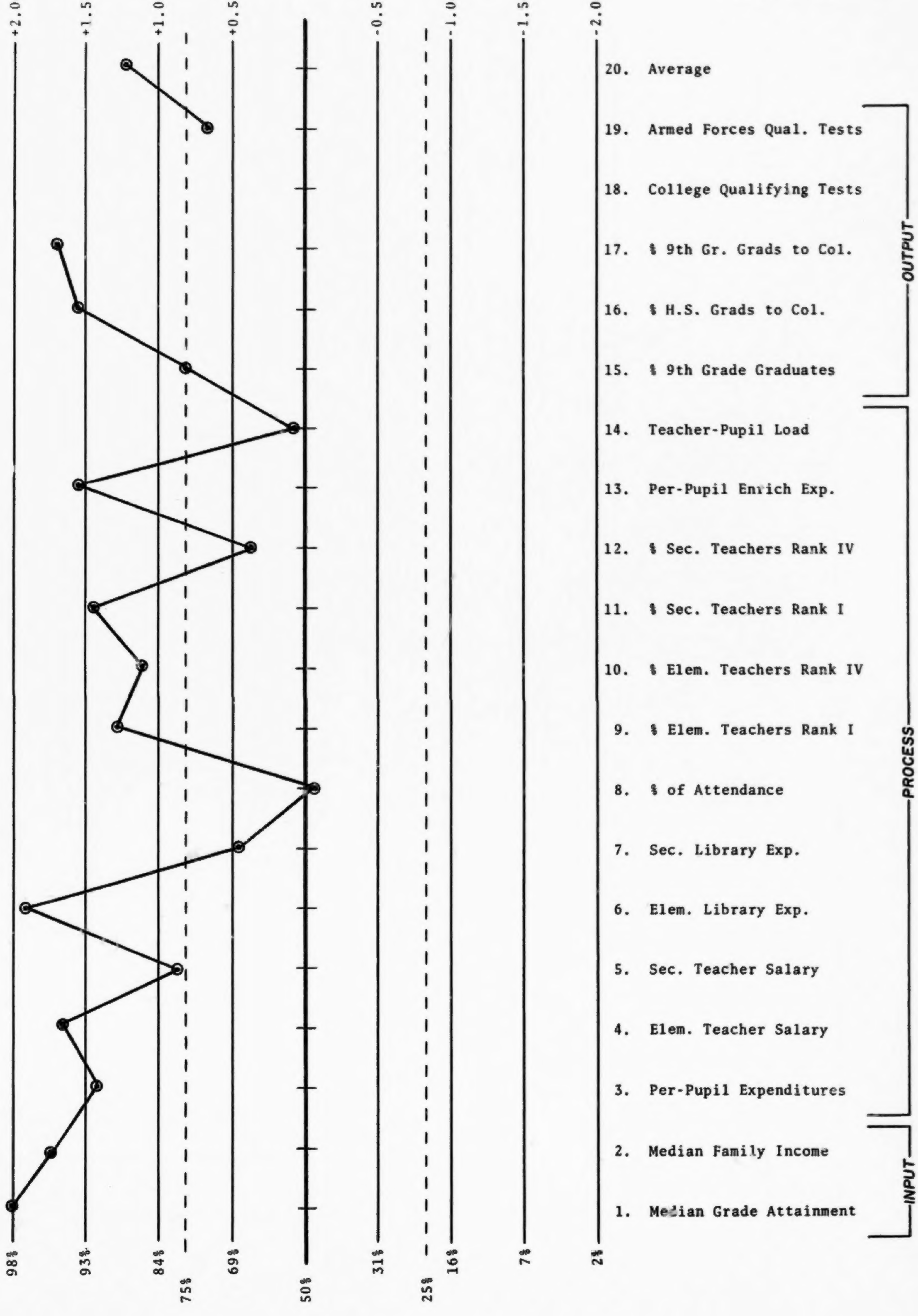
FAYETTE CO.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1. Median Grade Attainment
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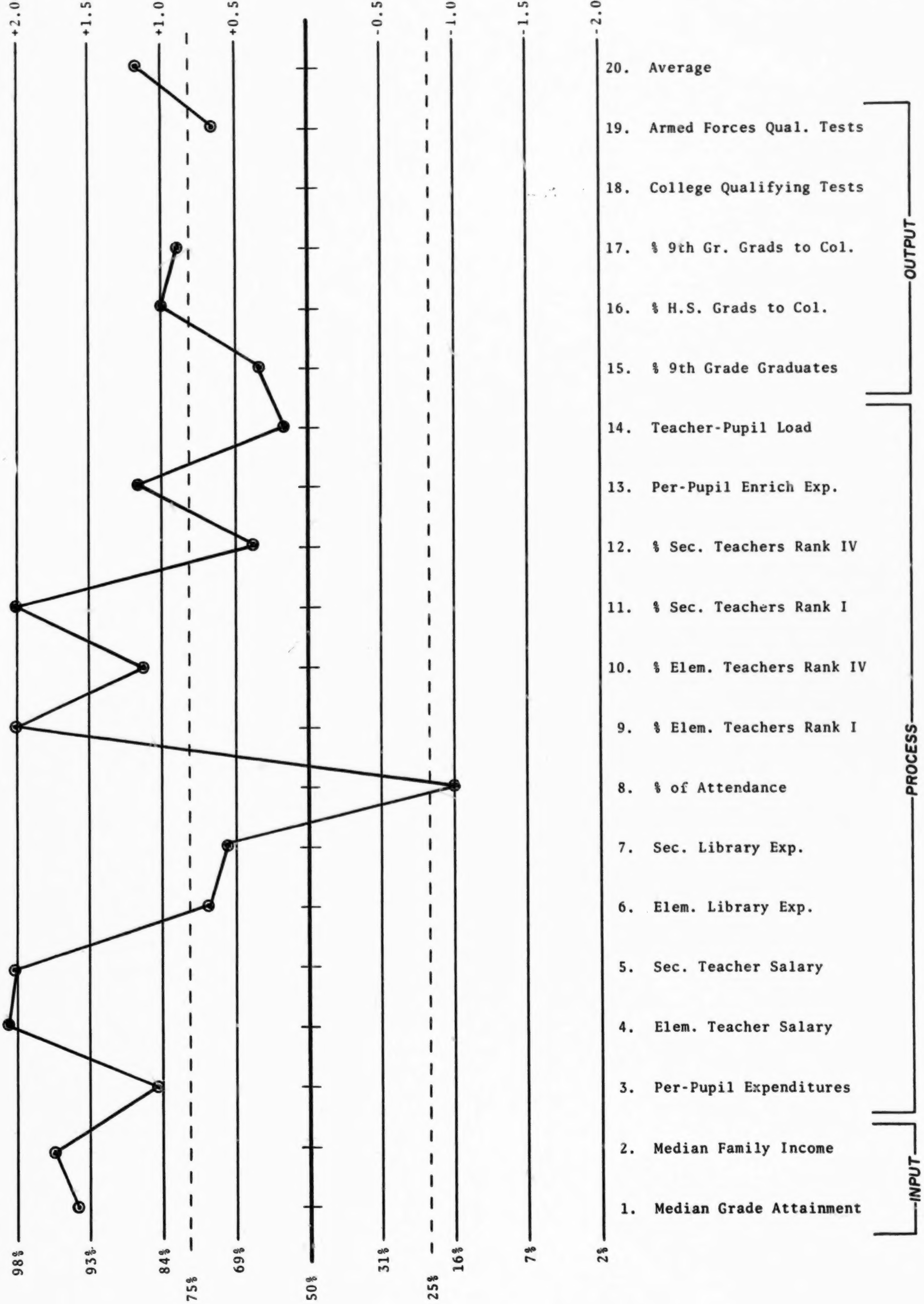
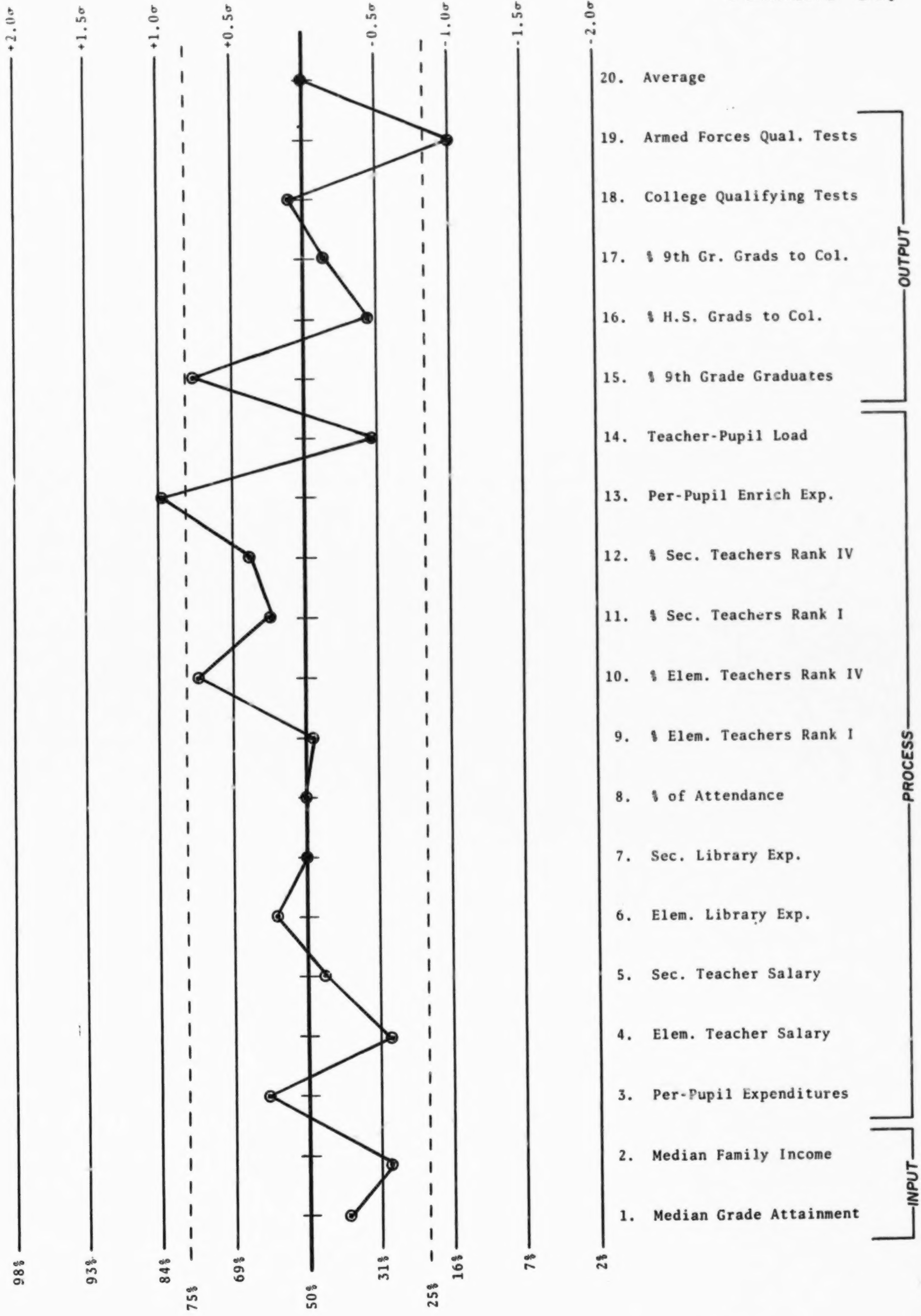
LEXINGTON IND.



FLEMING CO.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15. % 9th Grade Graduates
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1. Median Grade Attainment
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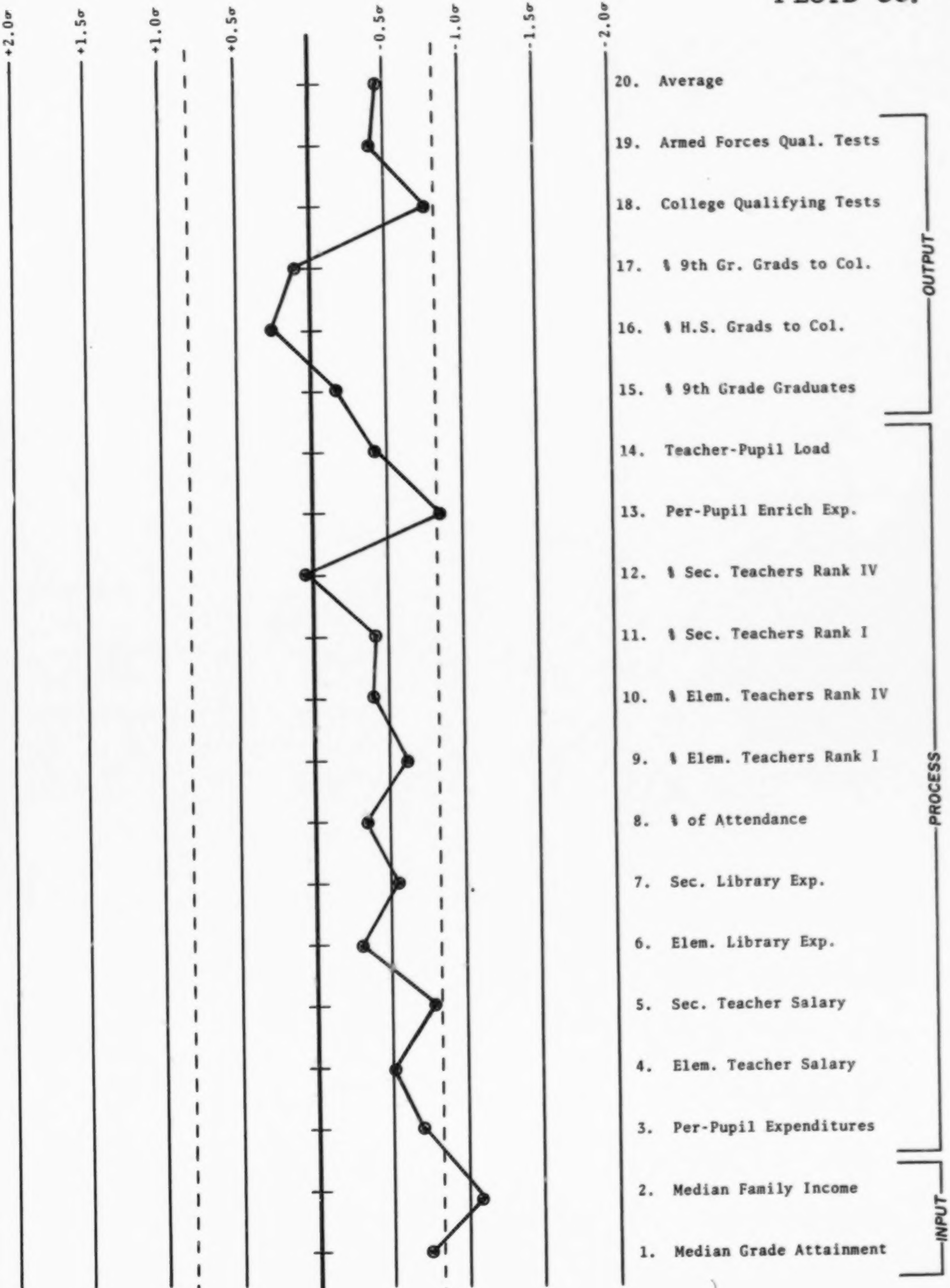
FLOYD CO.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1. Median Grade Attainment
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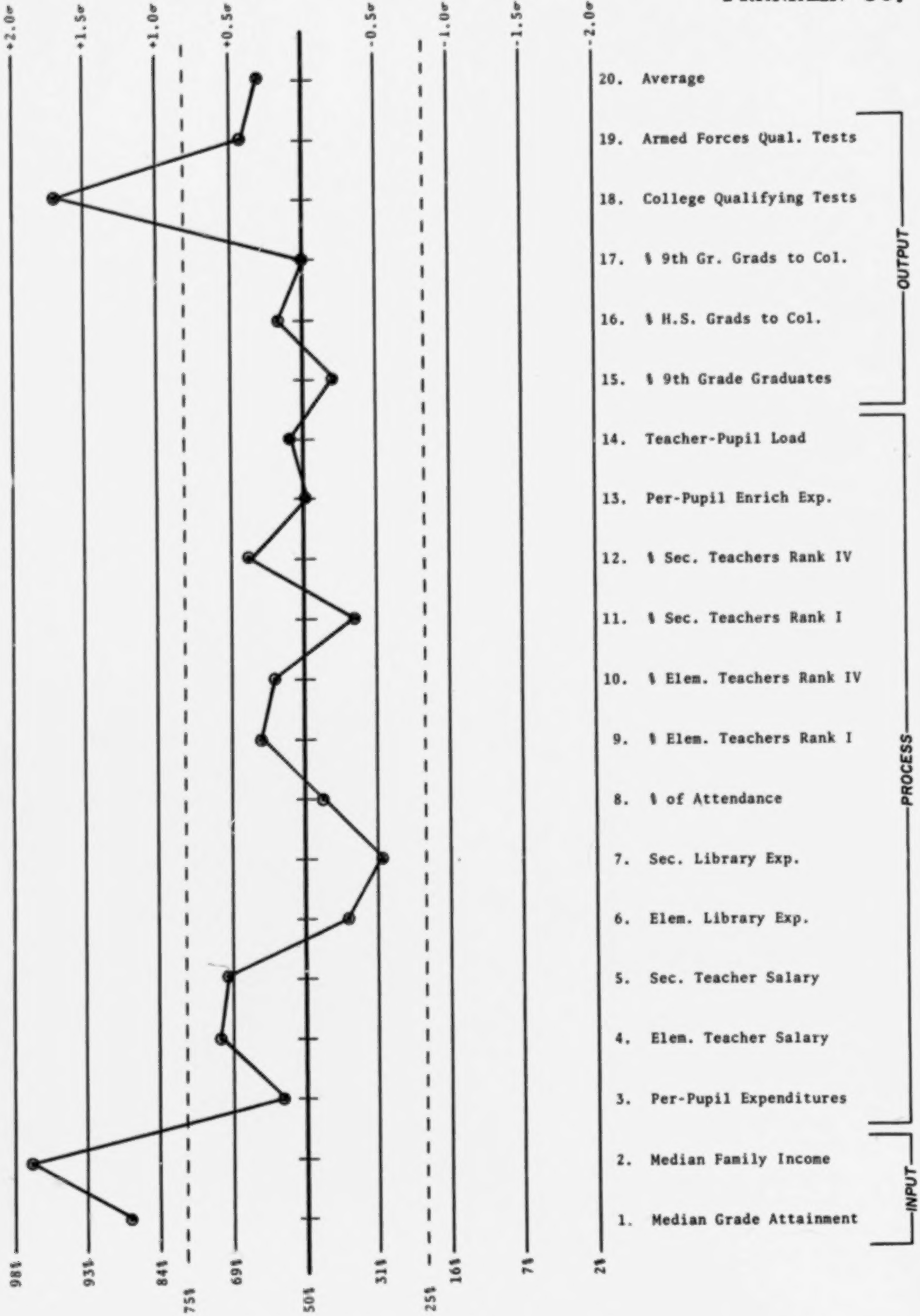
FRANKLIN CO.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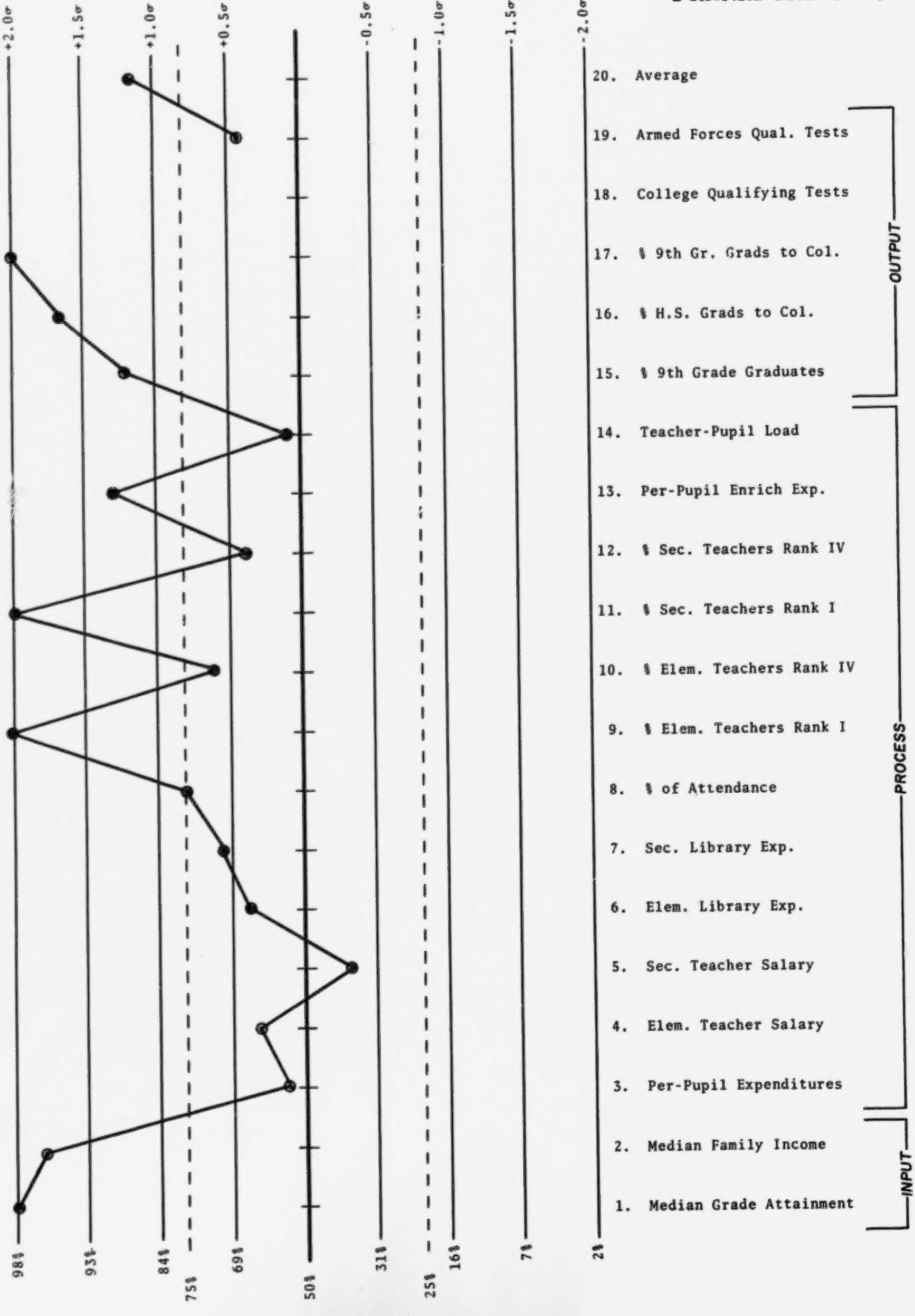
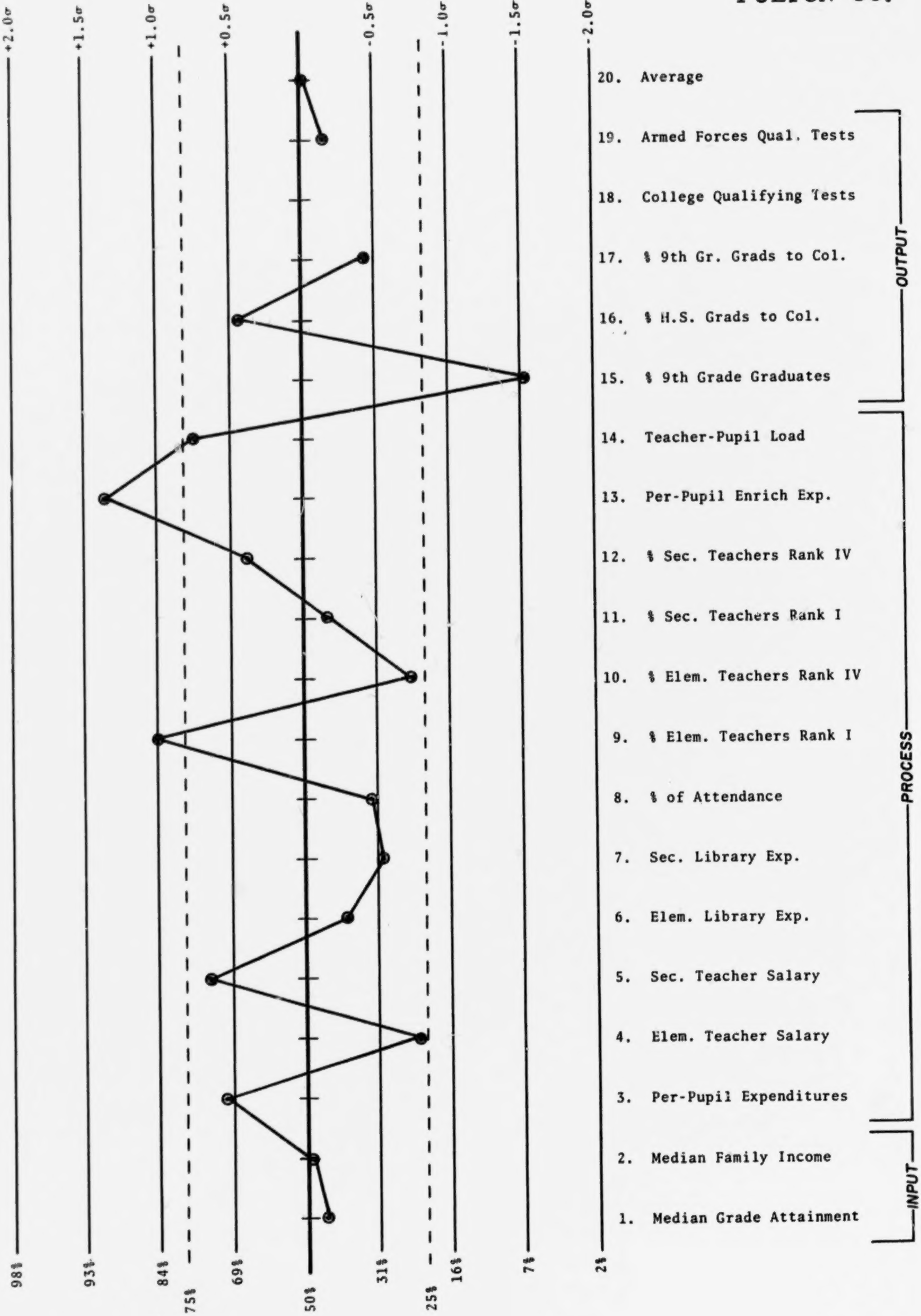
FRANKFORT IND.



FULTON CO.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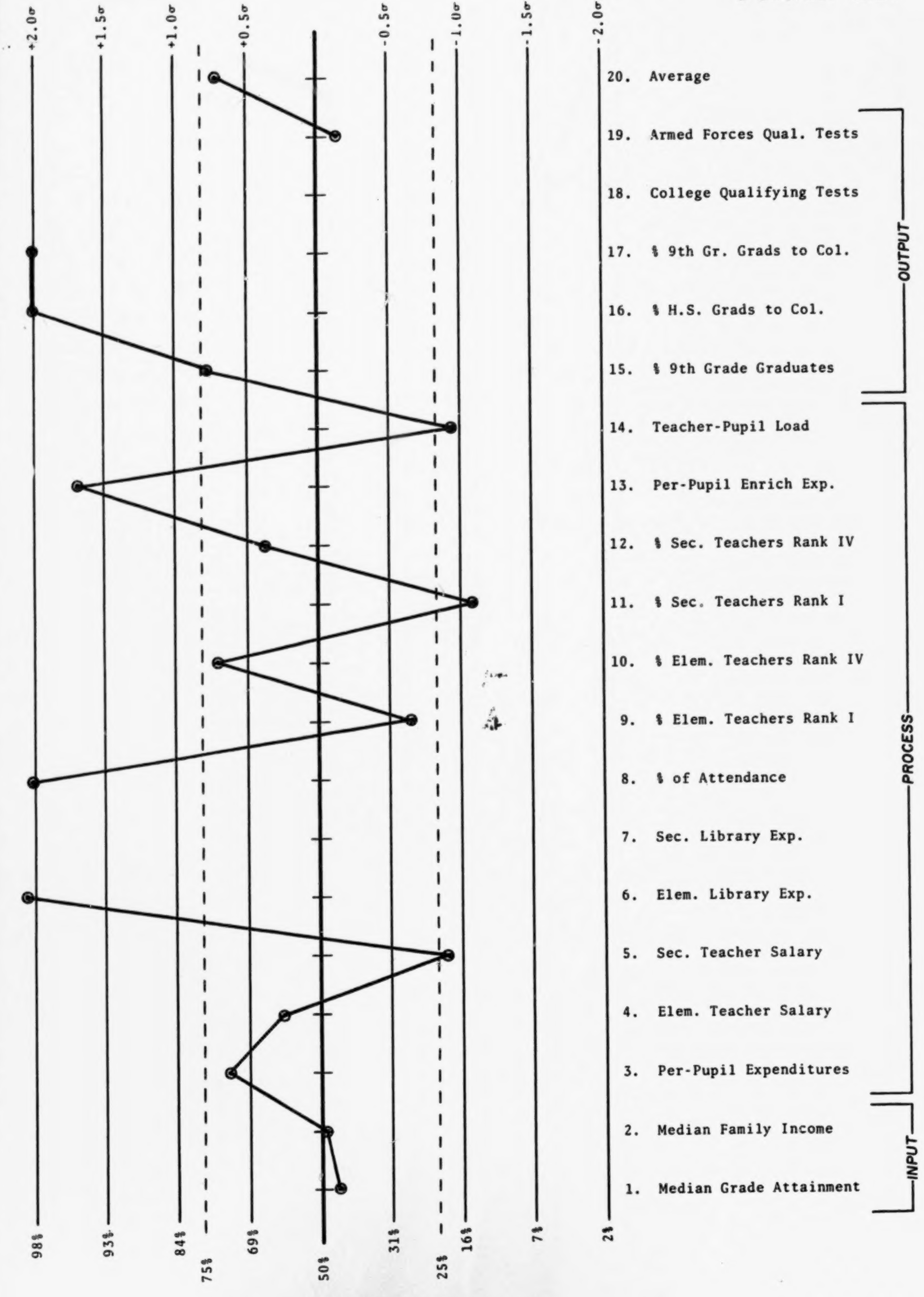
FULTON IND.



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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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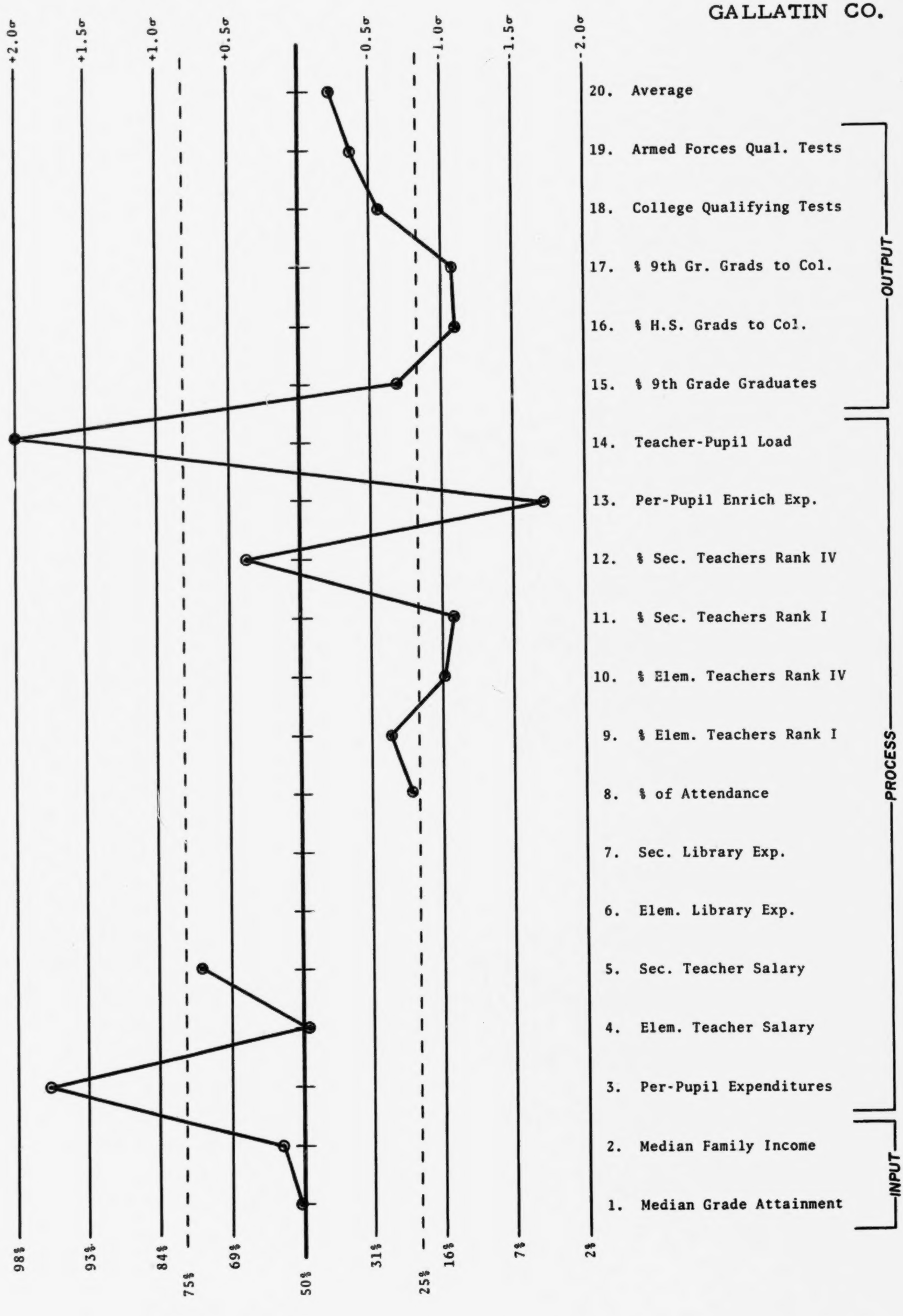
GALLATIN CO.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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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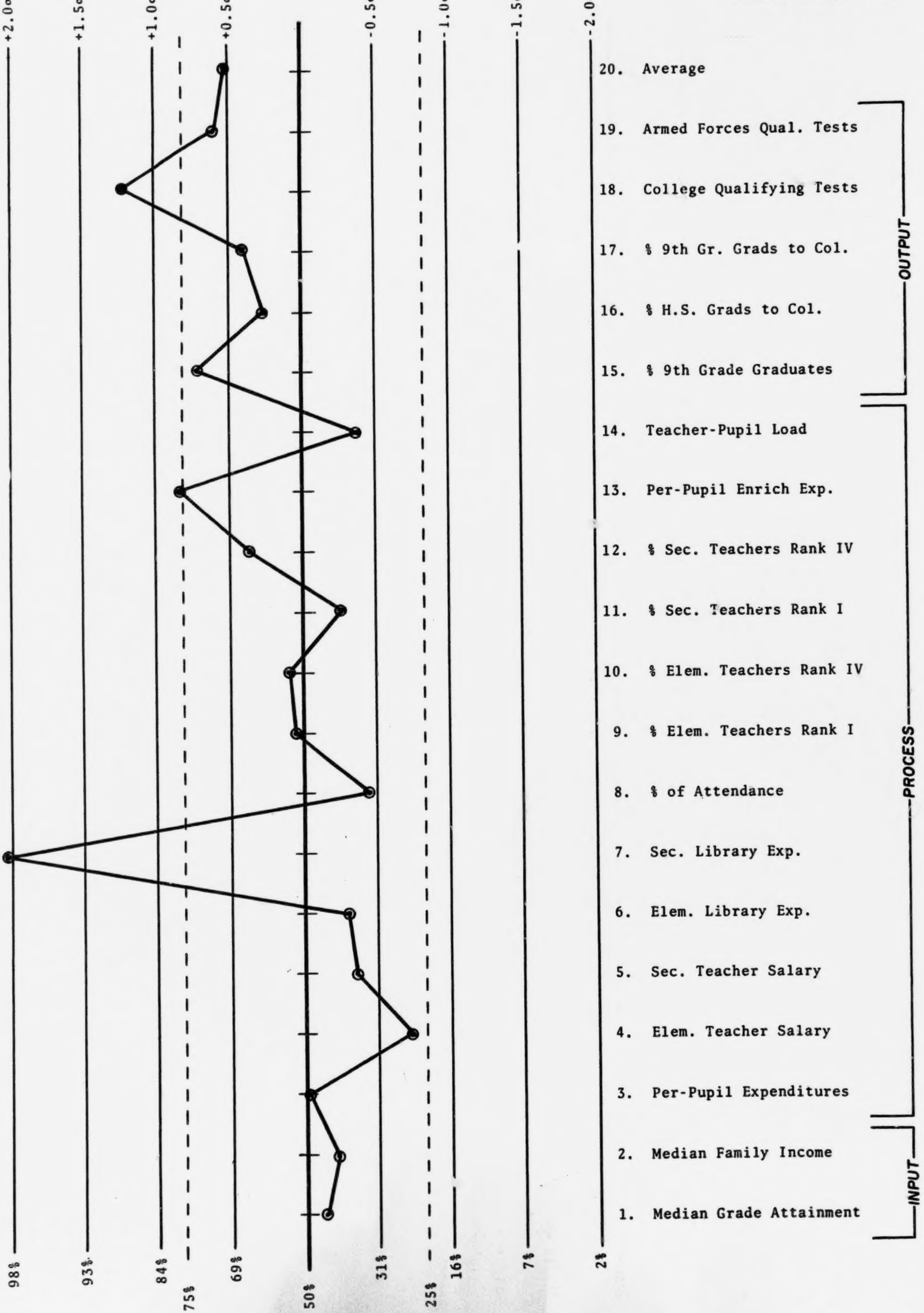
GARRARD CO.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5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
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1. Median Grade Attainment
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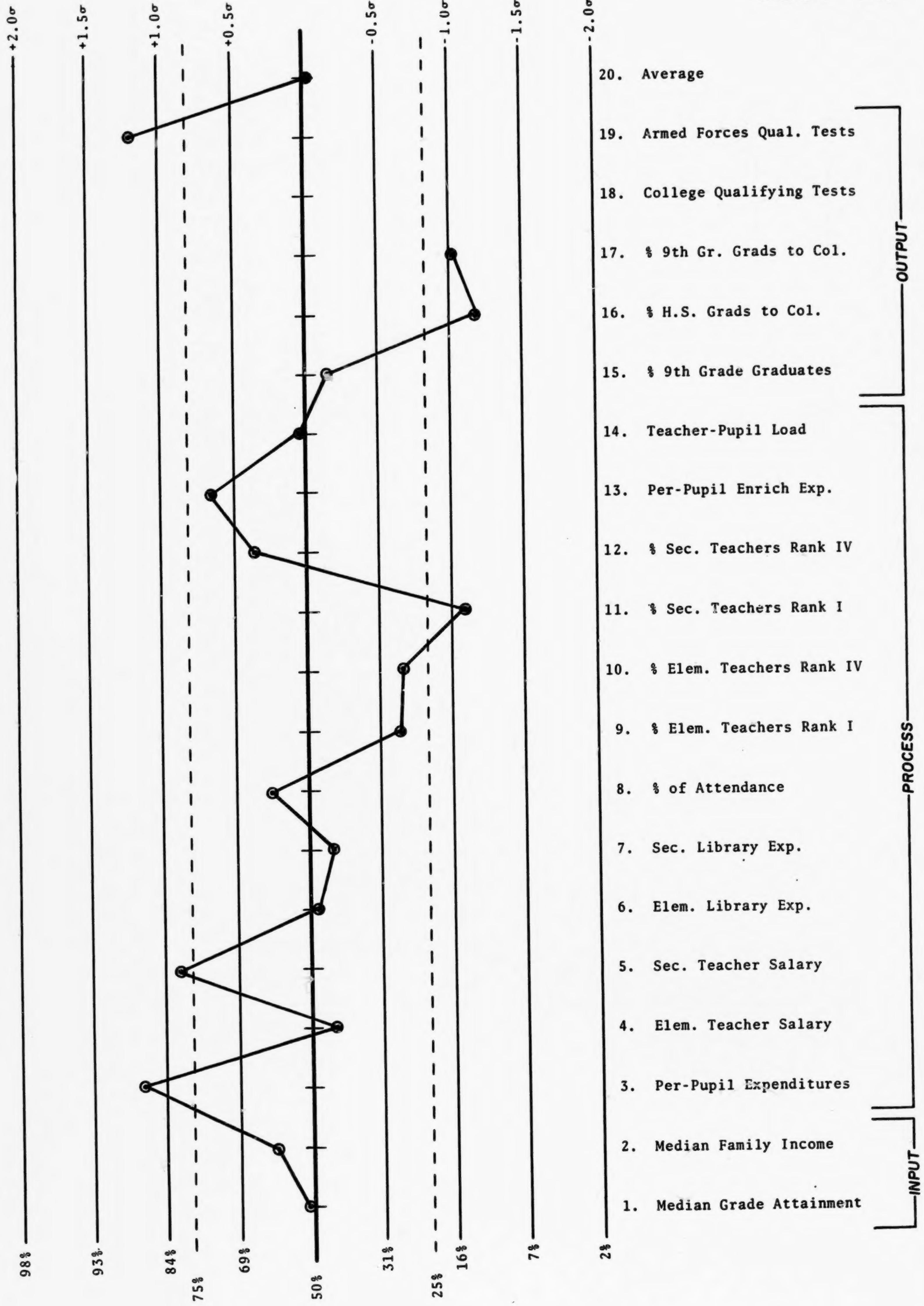
GRANT CO.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18. College Qualifying Tests
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16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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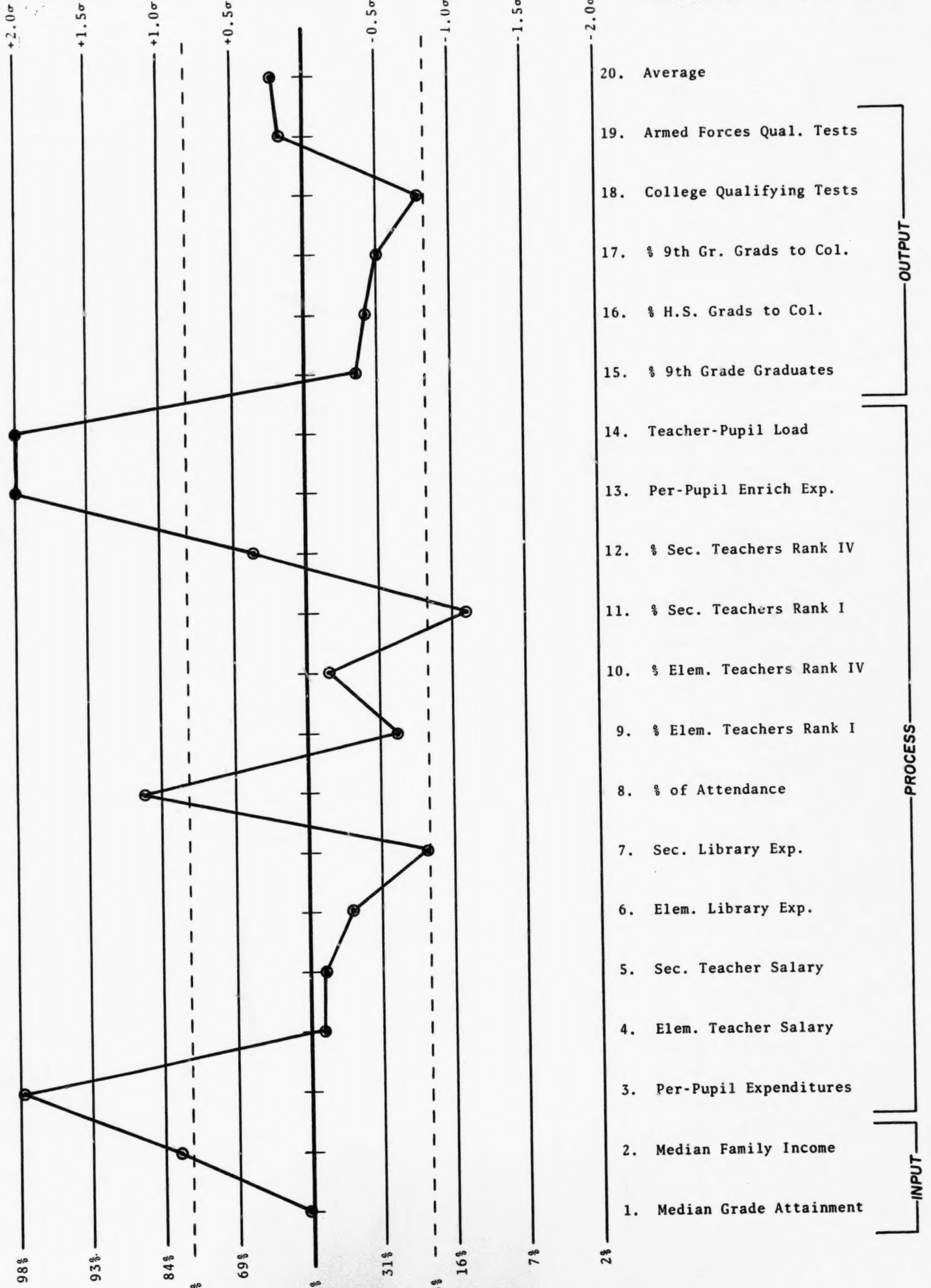
WILLIAMSTOWN IND.



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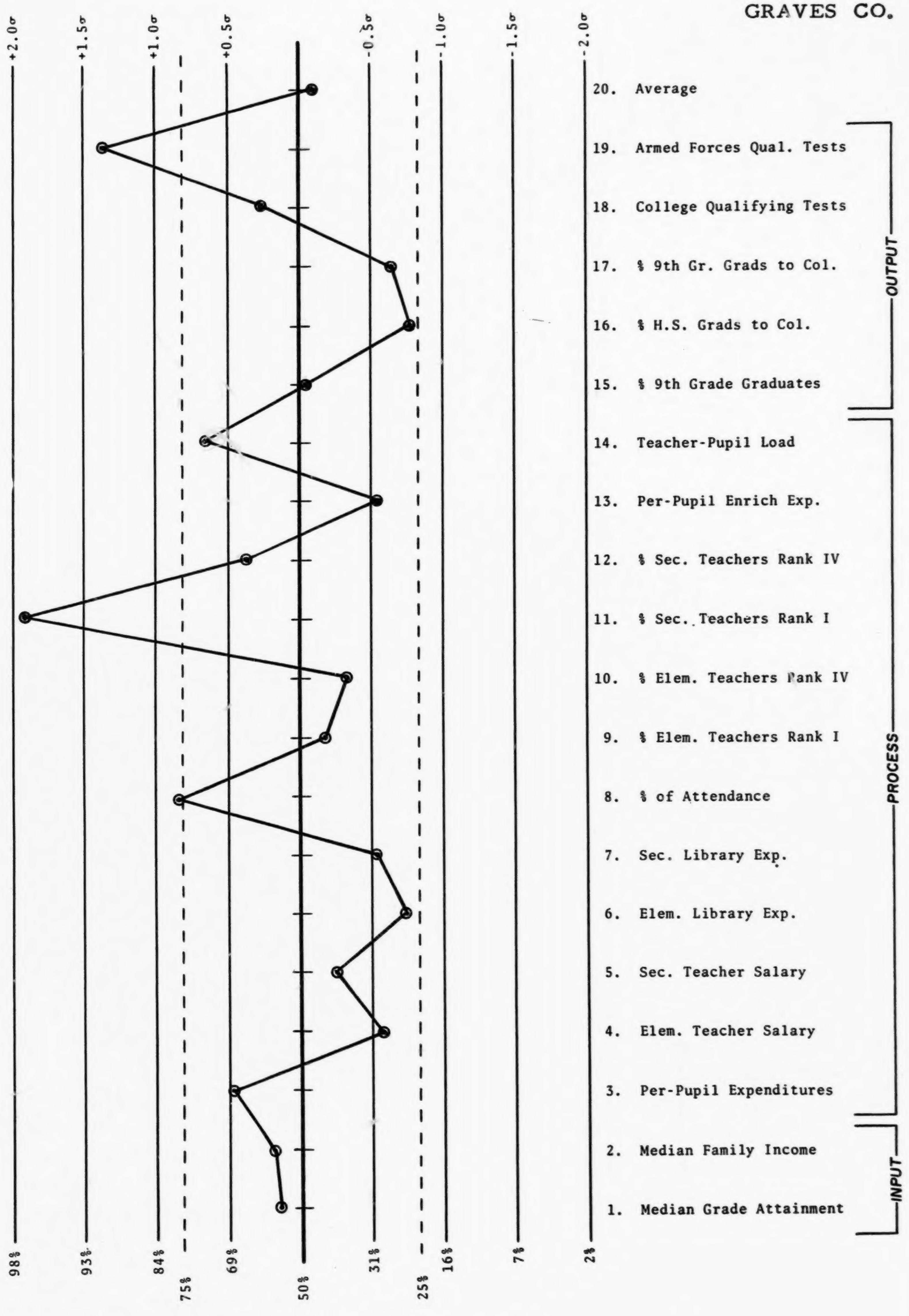
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15. % 9th Grade Graduates
14. Teacher-Pupil Load
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12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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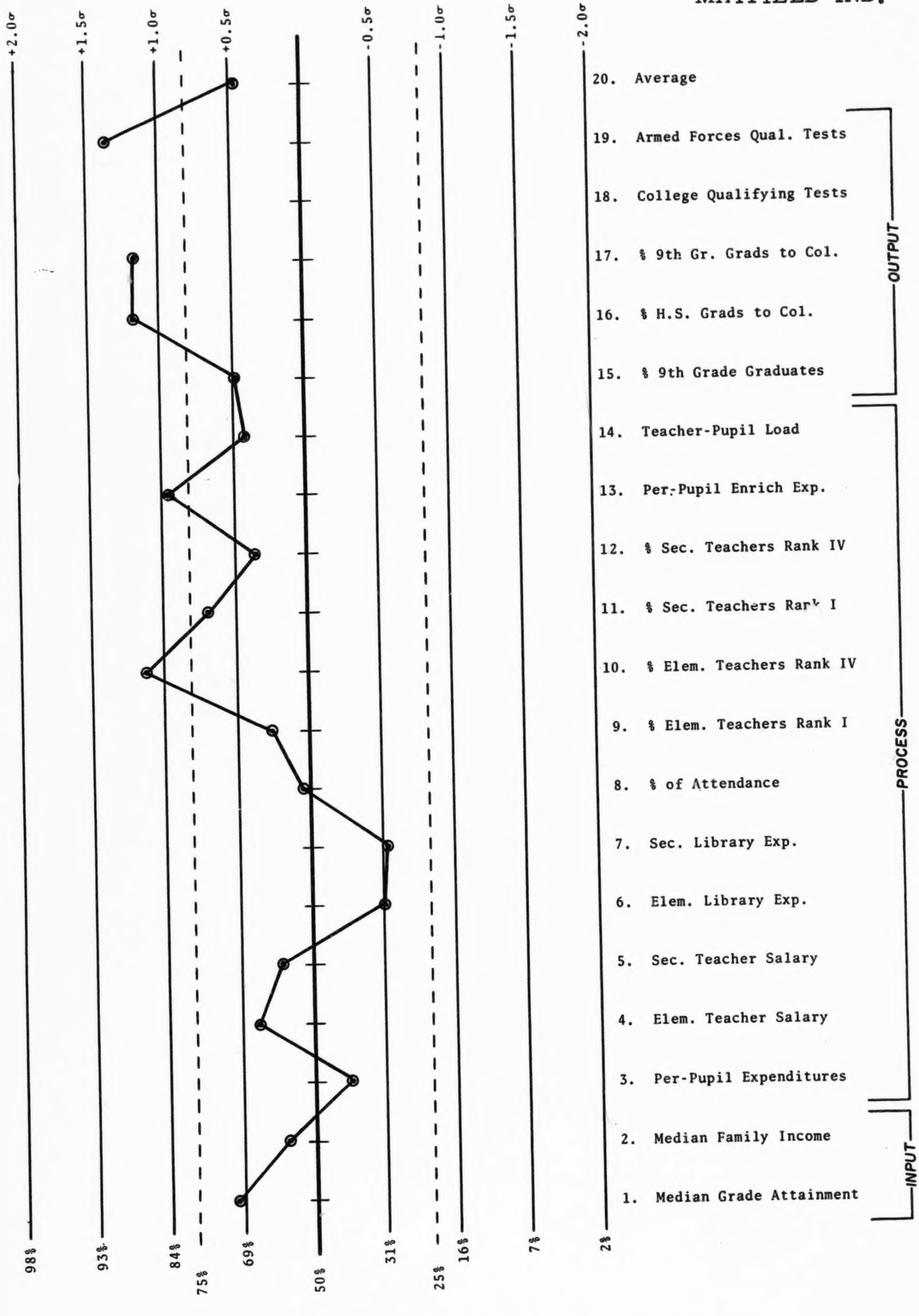
MAYFIELD IND.



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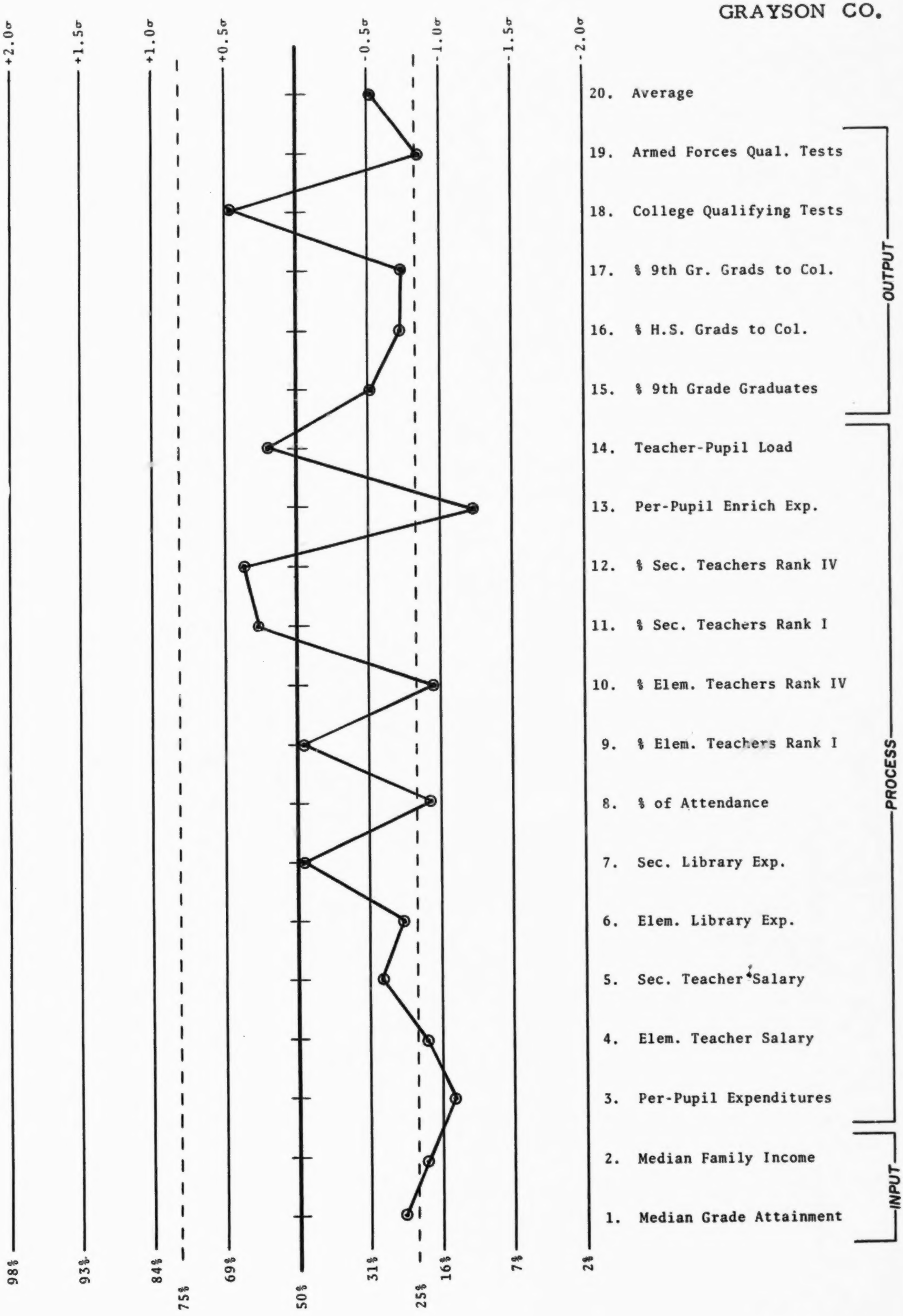
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8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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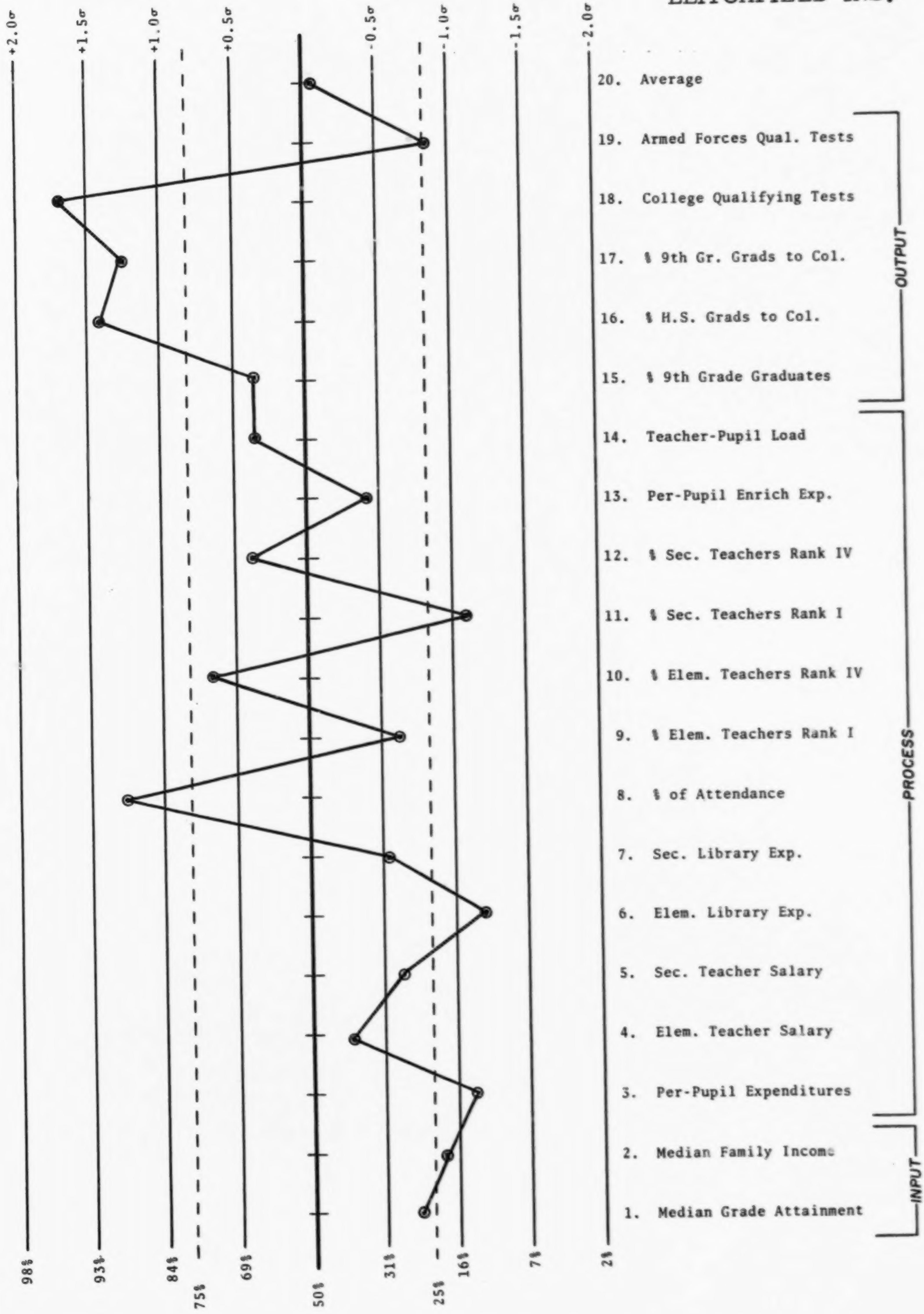
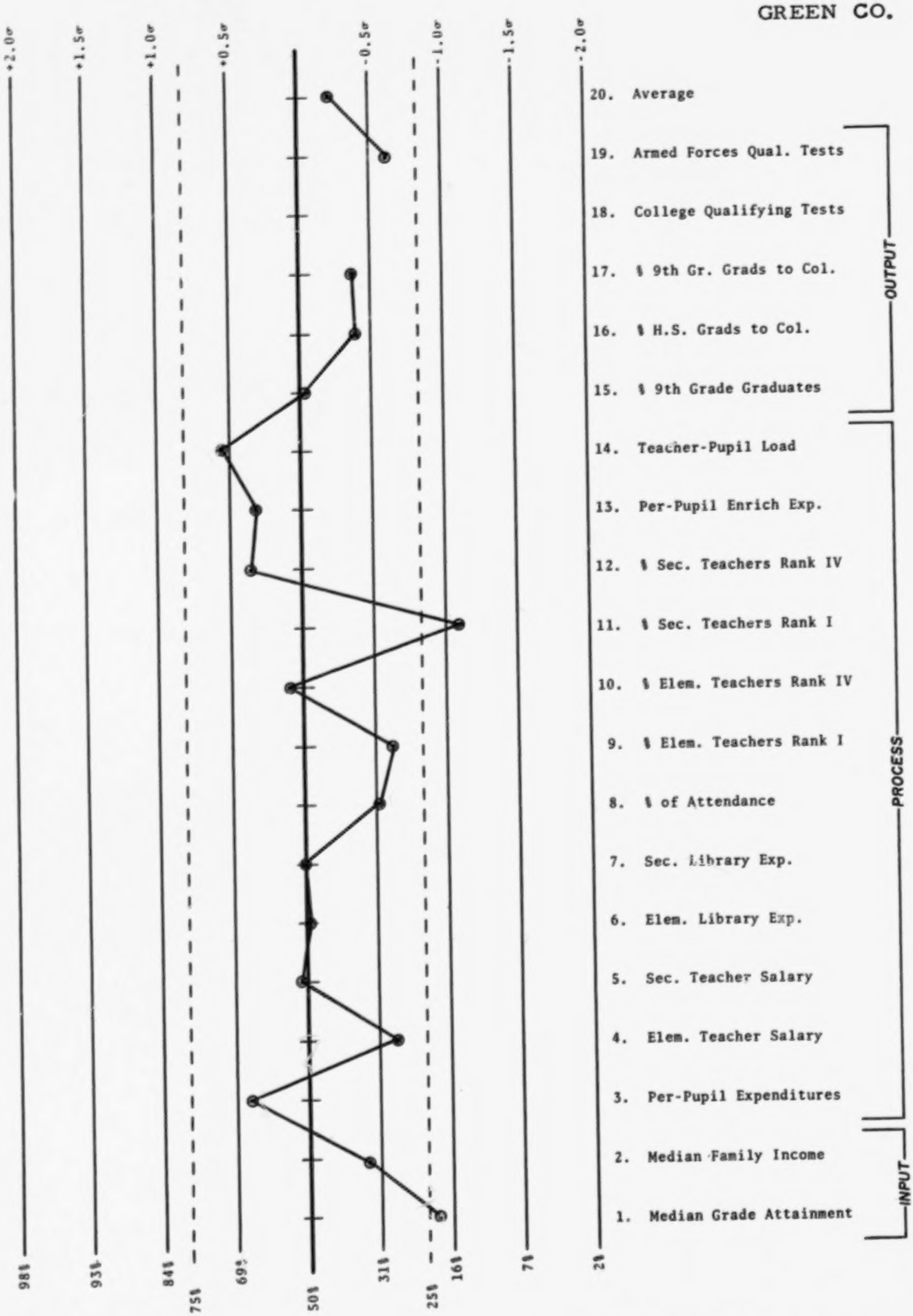
LEITCHFIELD IND.



GREEN CO.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15. % 9th Grade Graduates
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3. Per-Pupil Expenditures
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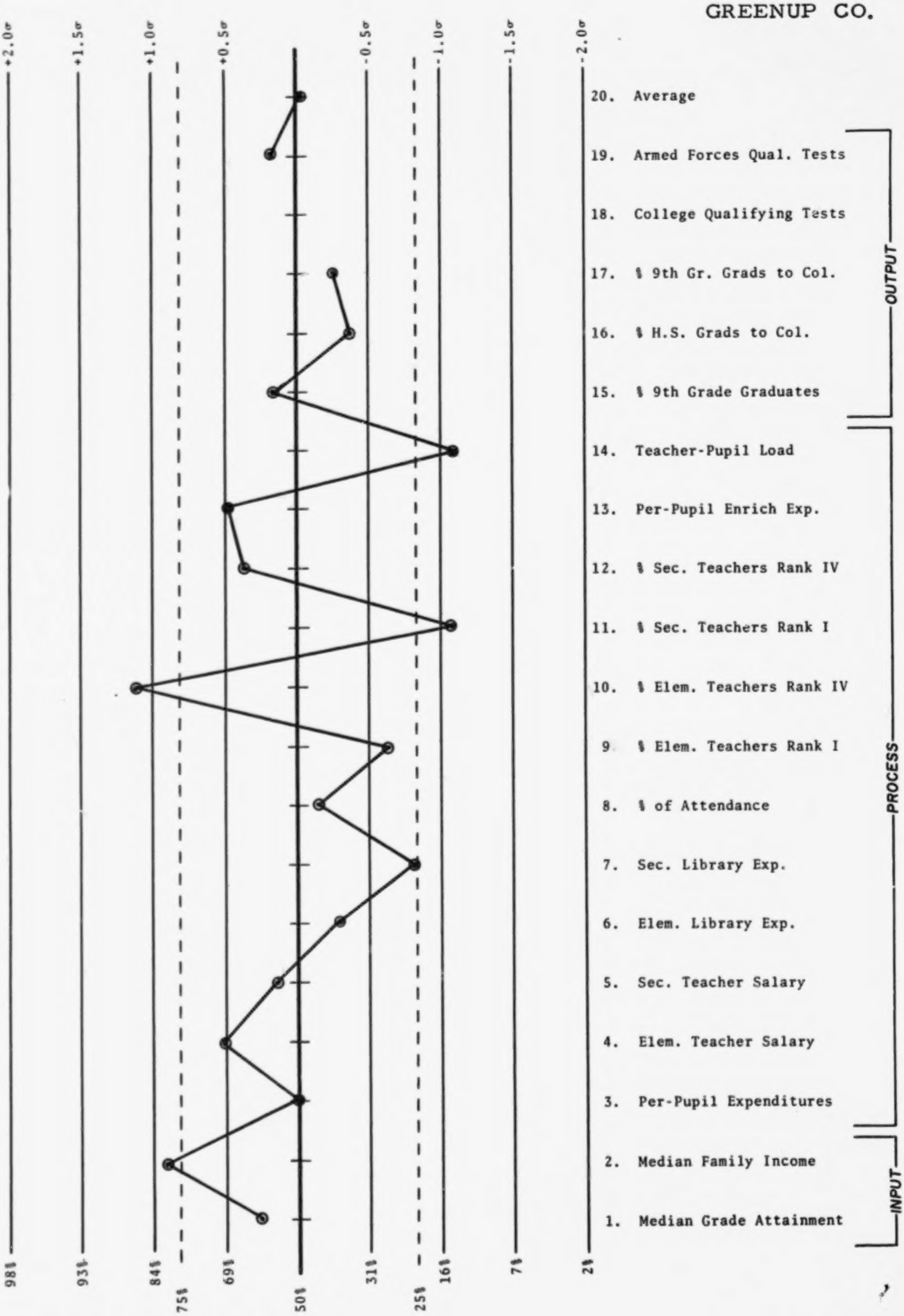
GREENUP CO.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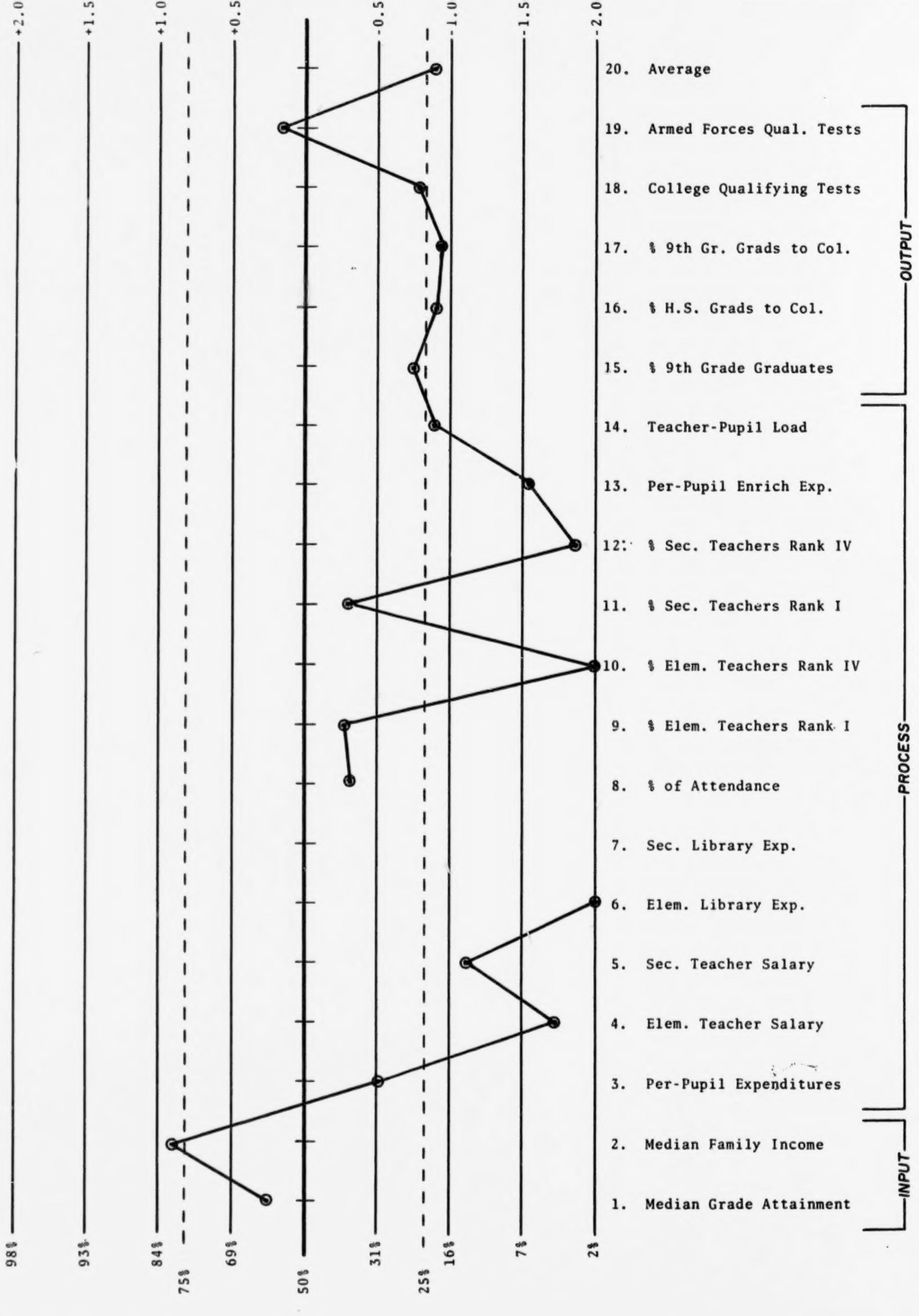
GREENUP IND.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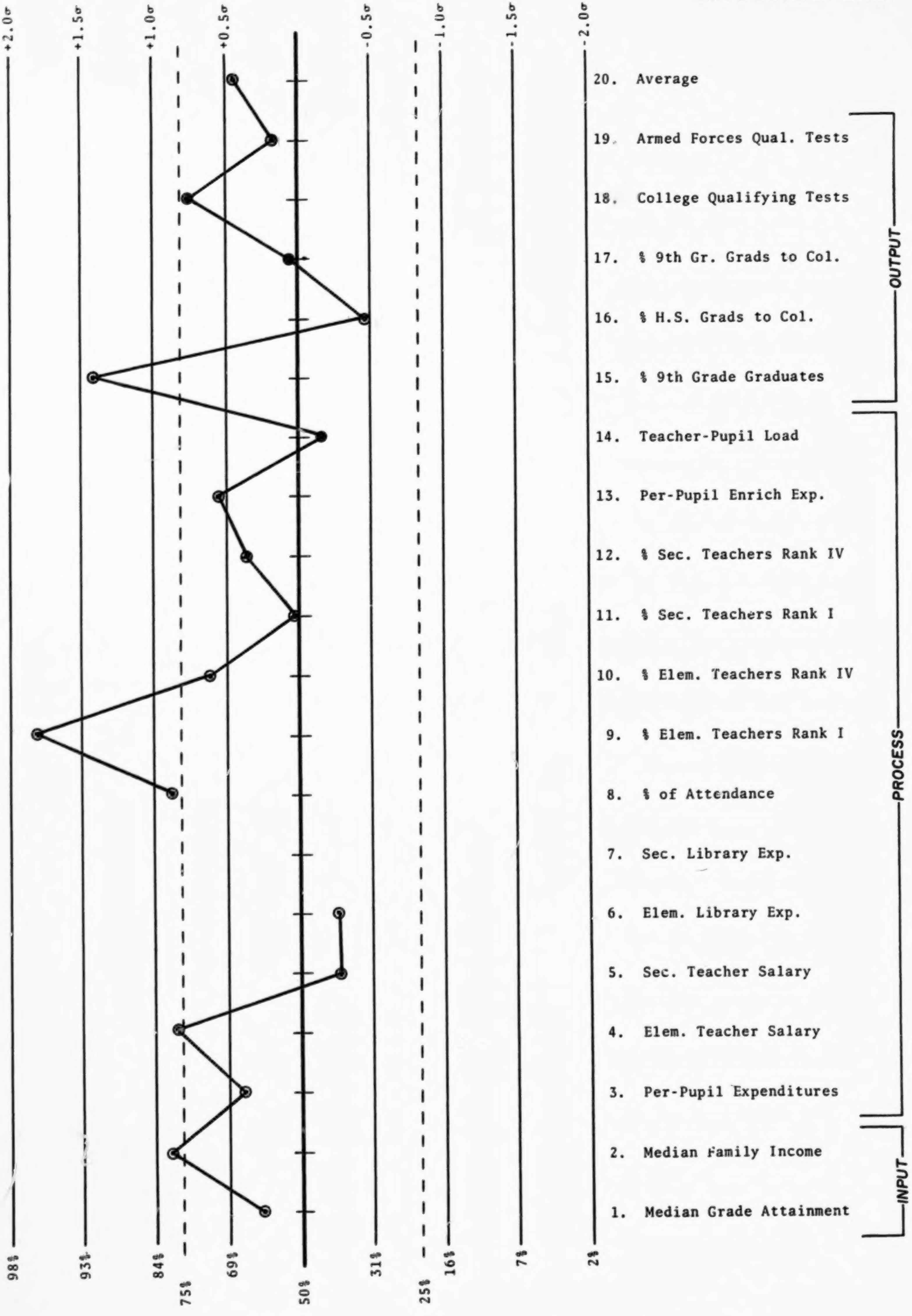
RACELAND IND.



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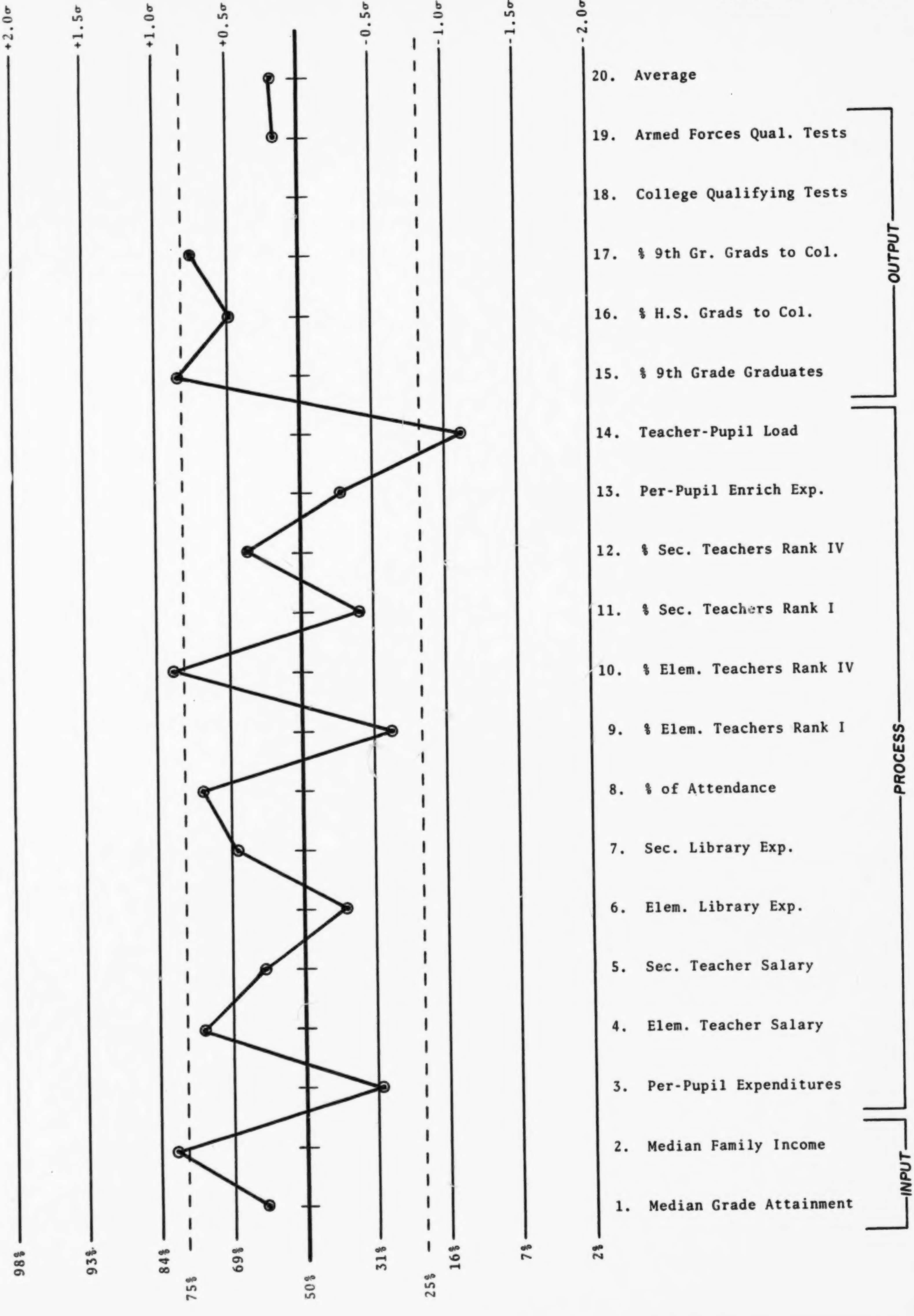
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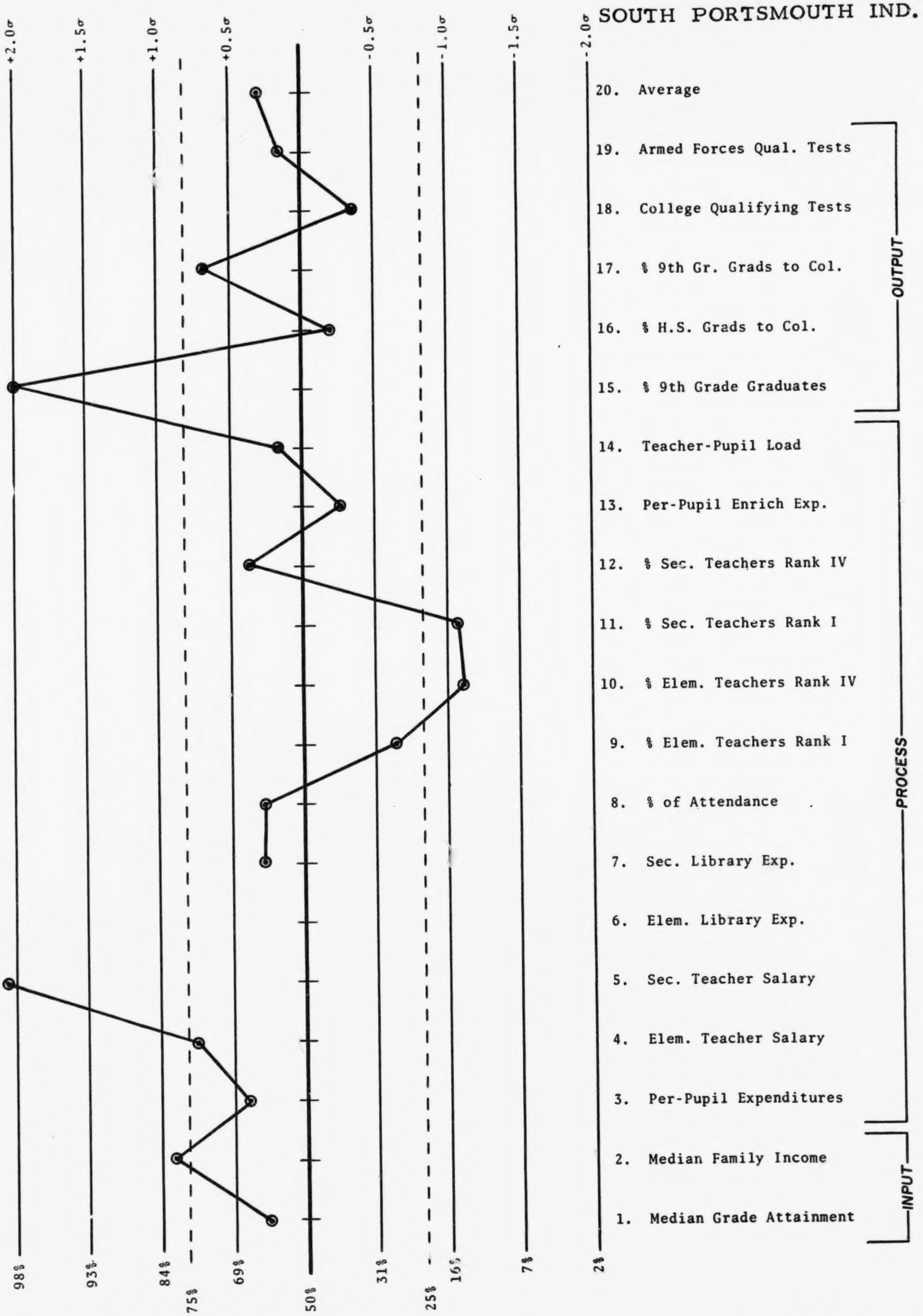
SOUTH PORTSMOUTH IND.



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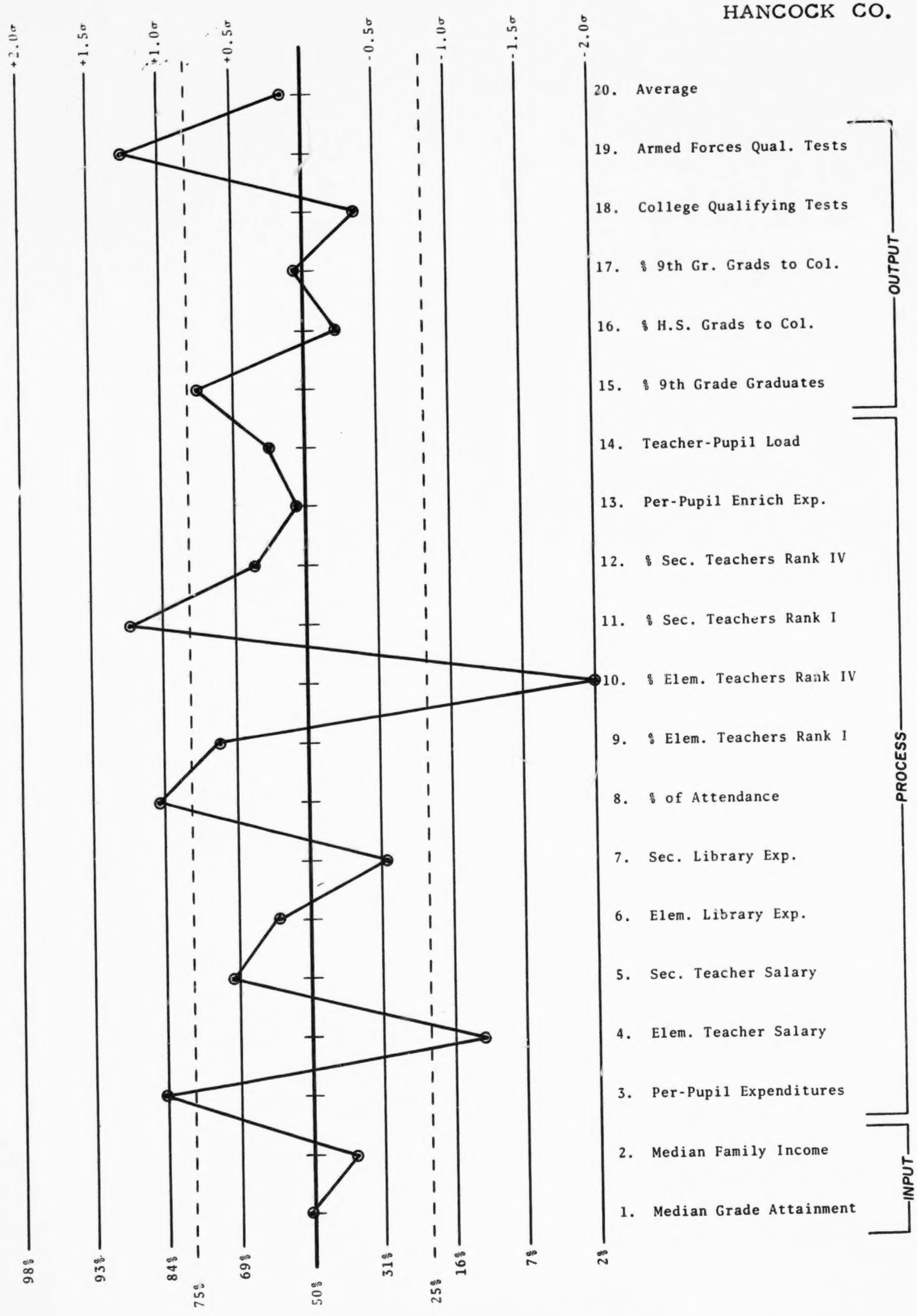
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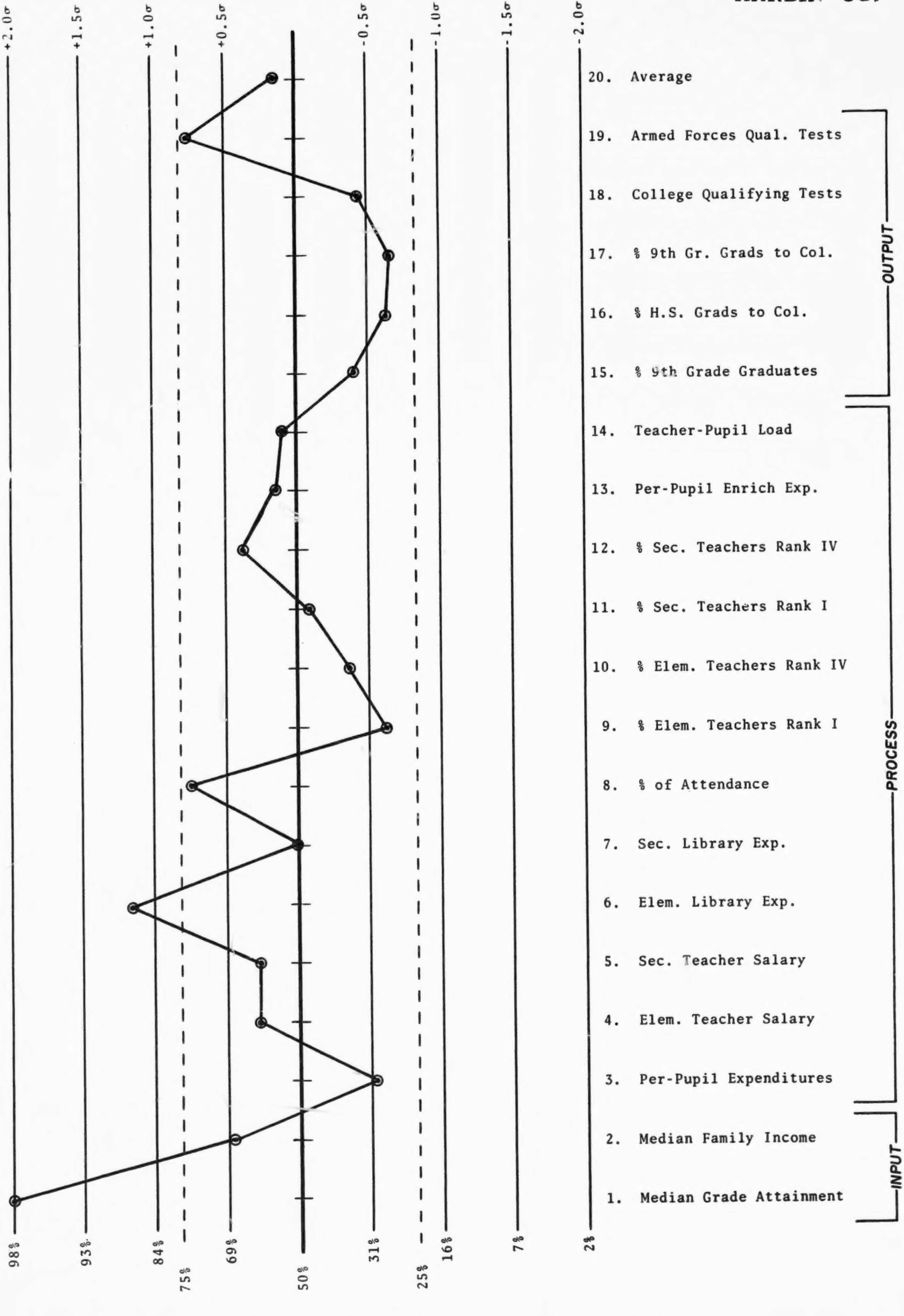
HARDIN CO.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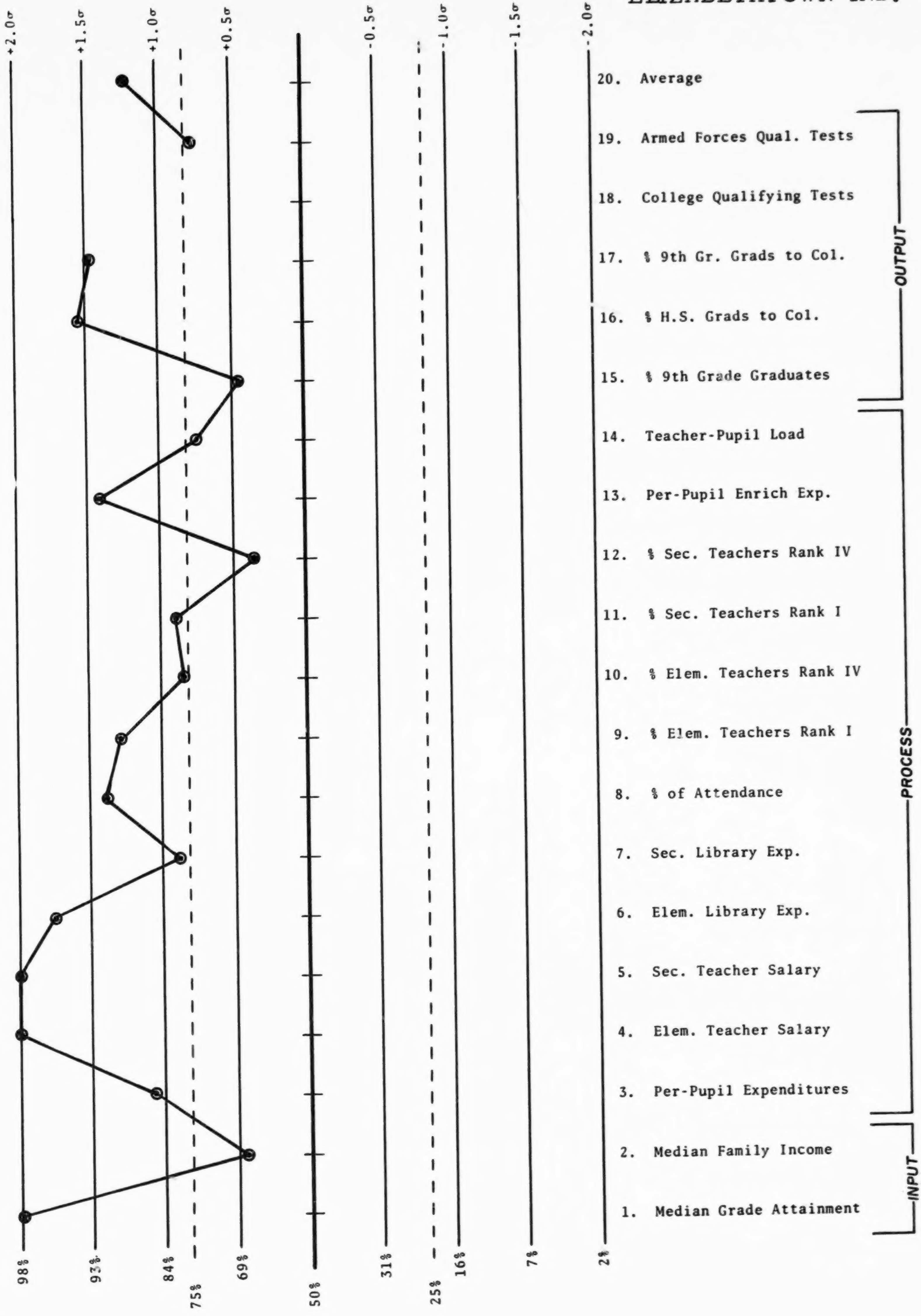
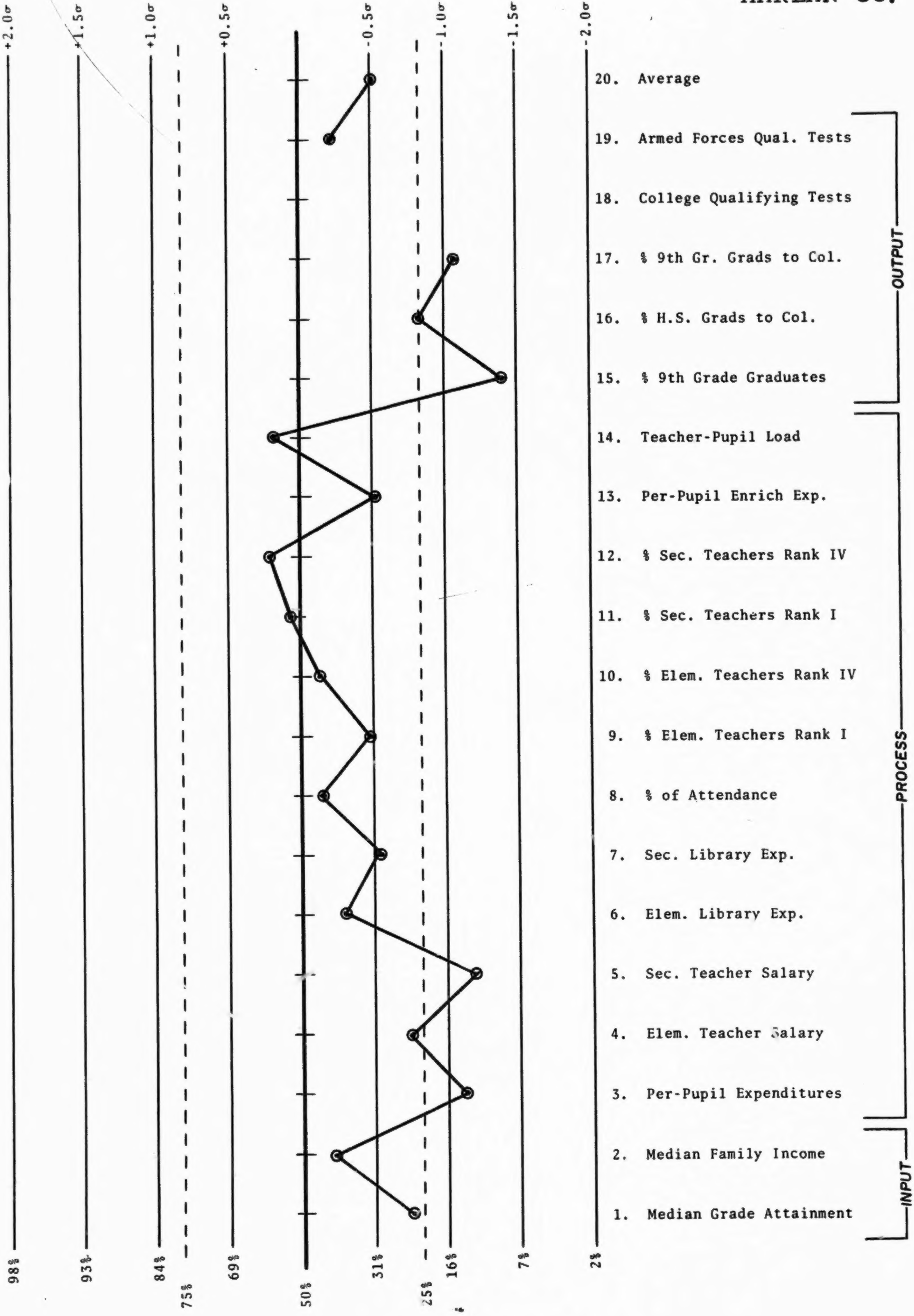
ELIZABETHTOWN IND.



HARLAN CO.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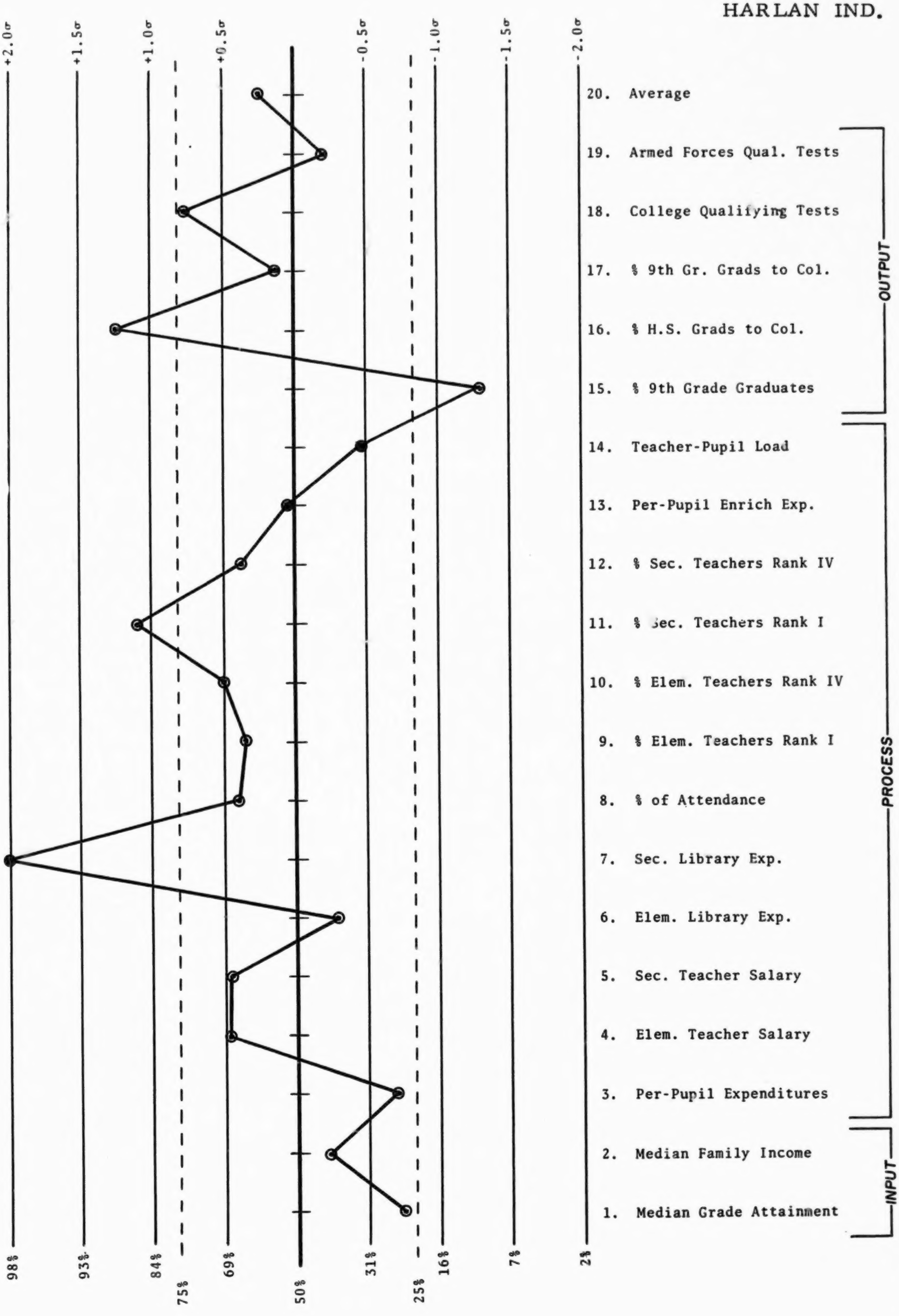
HARLAN IND.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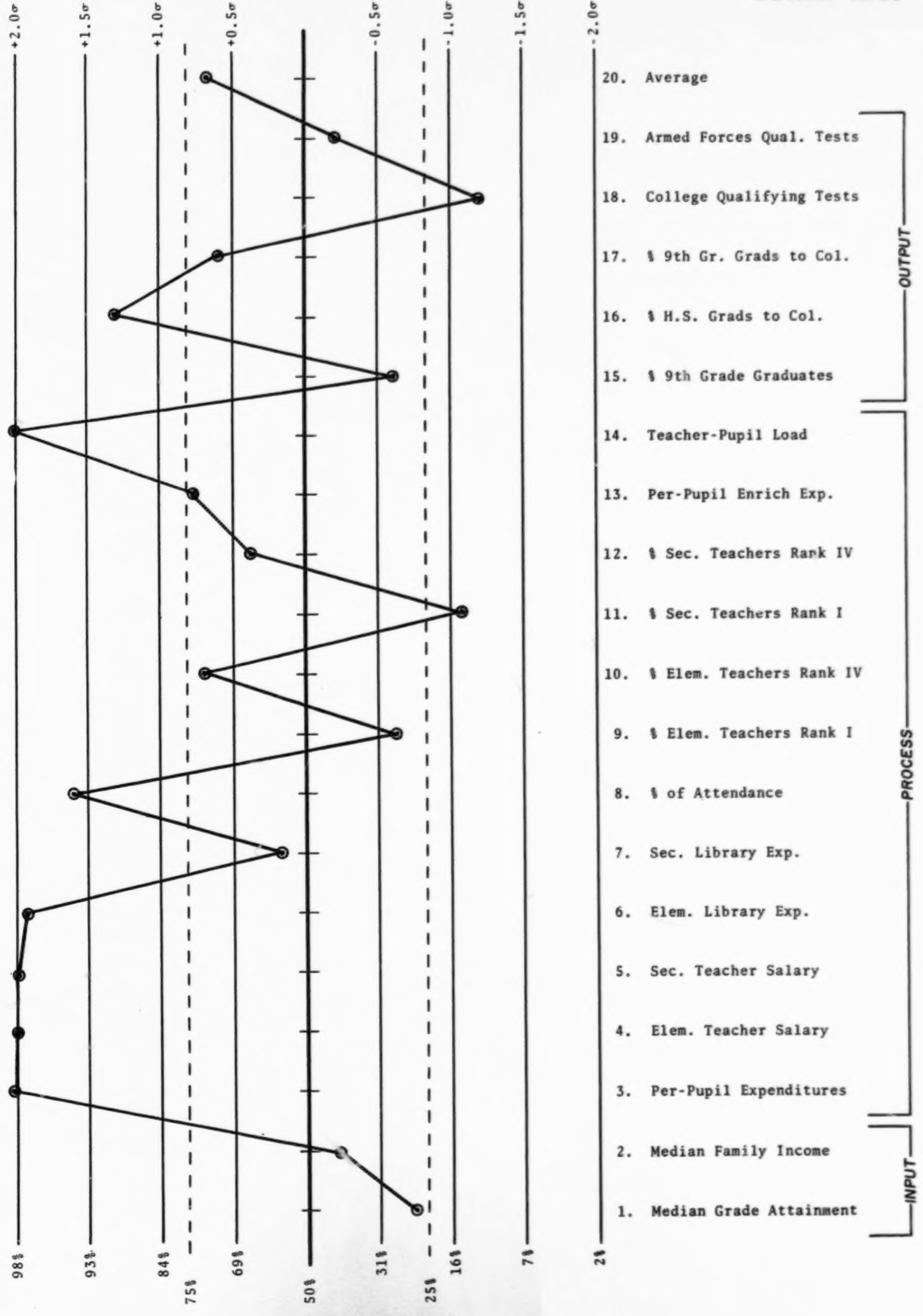
LYNCH IND.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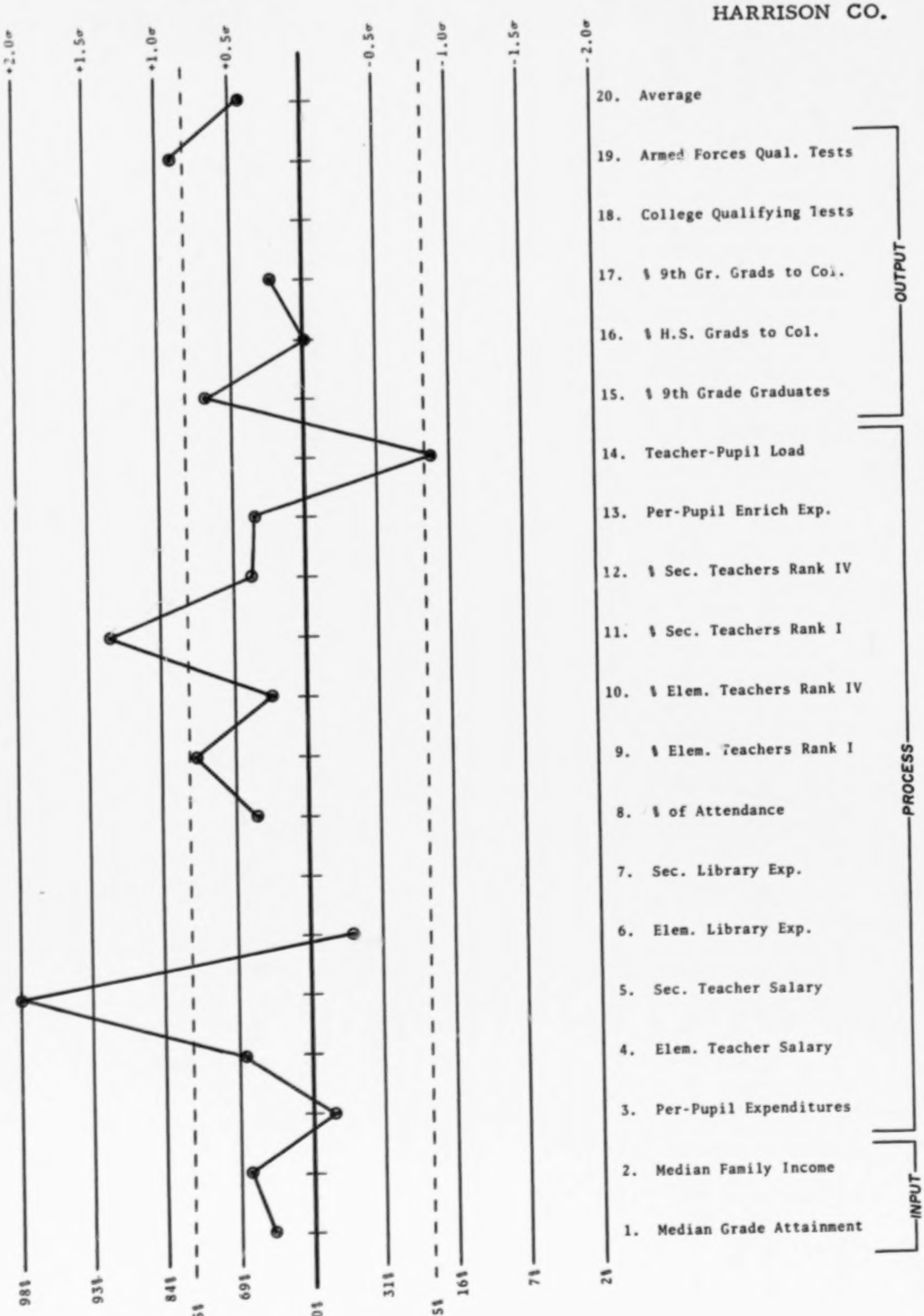
HARRISON CO.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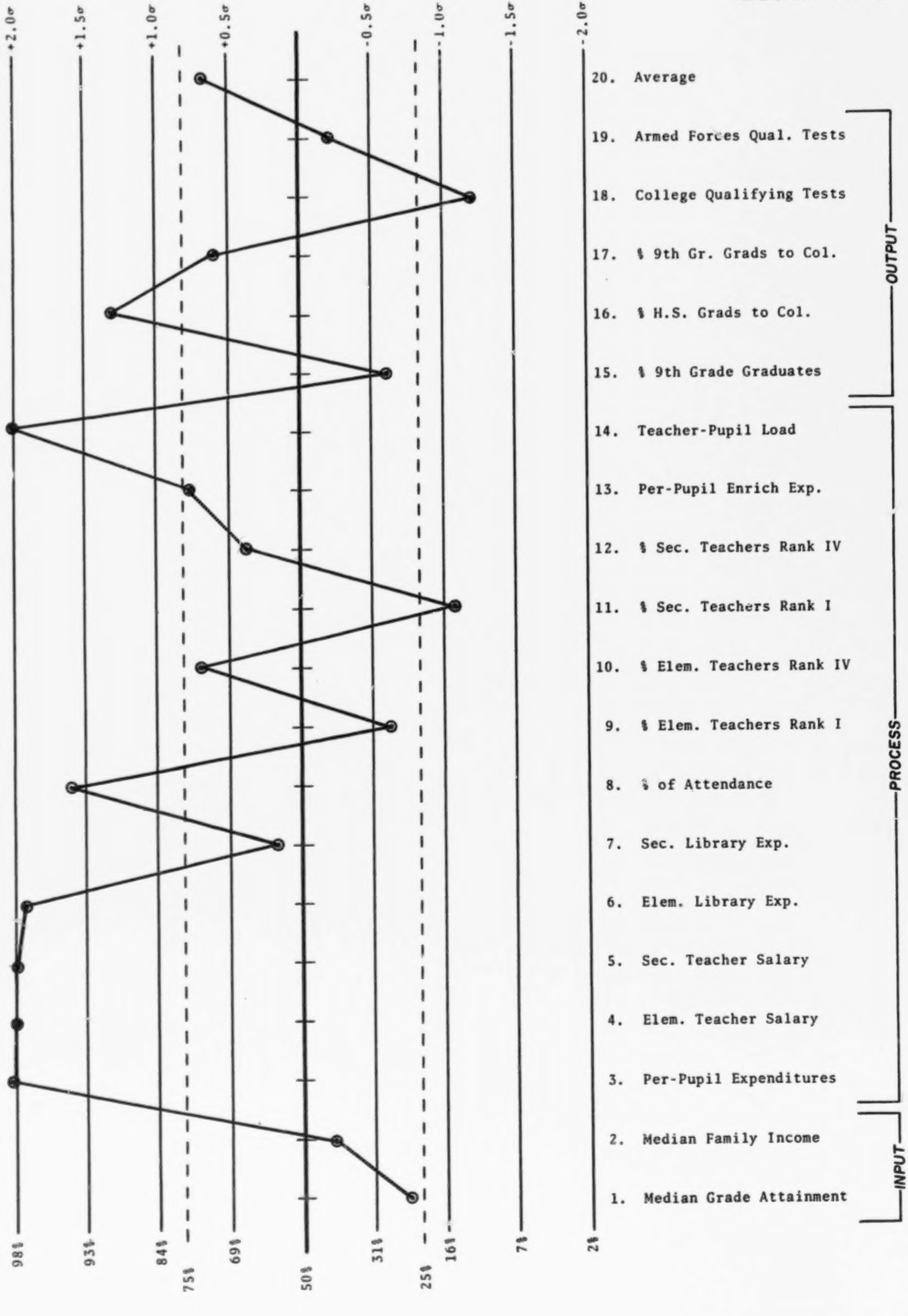
LYNCH IND.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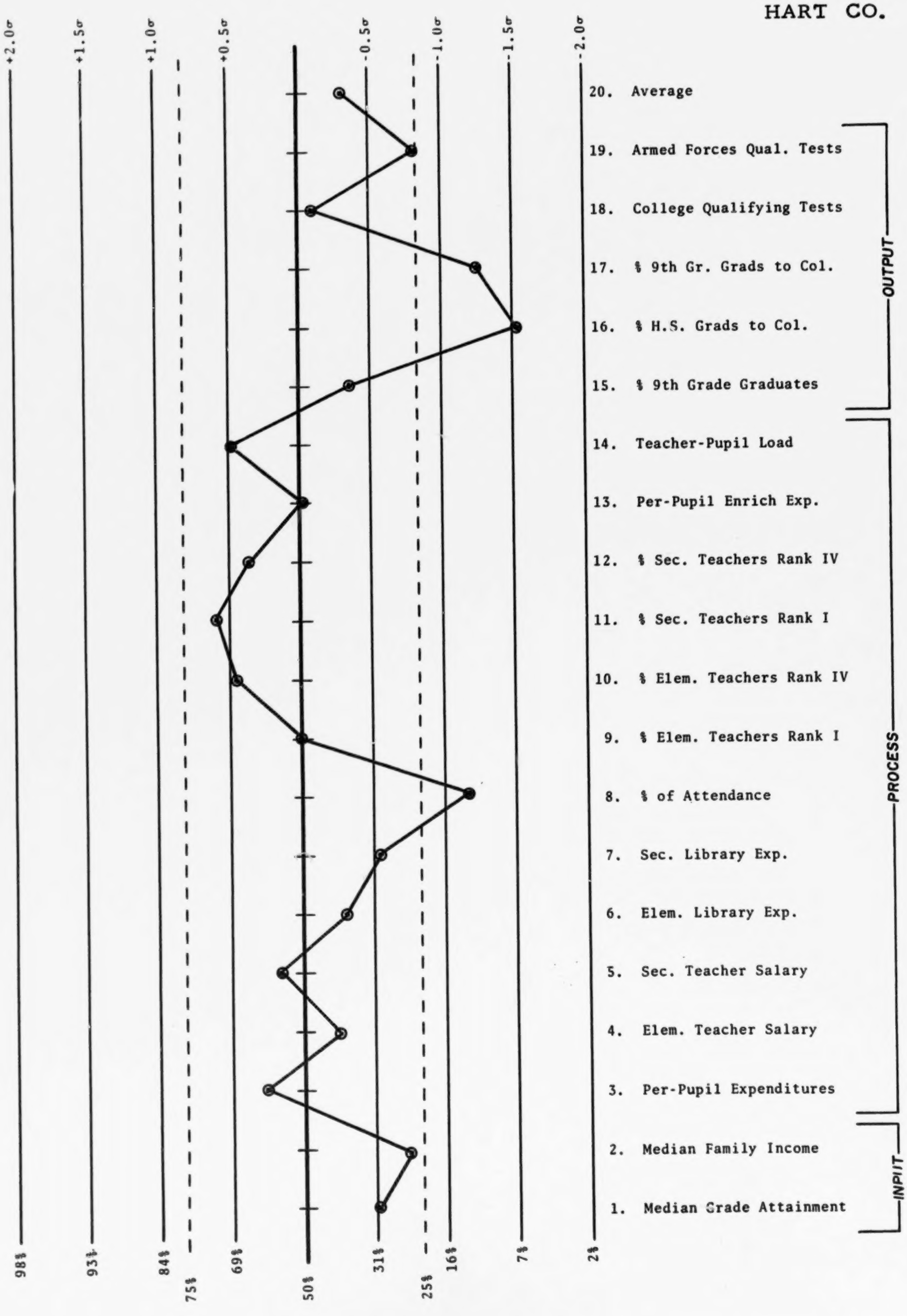
HART CO.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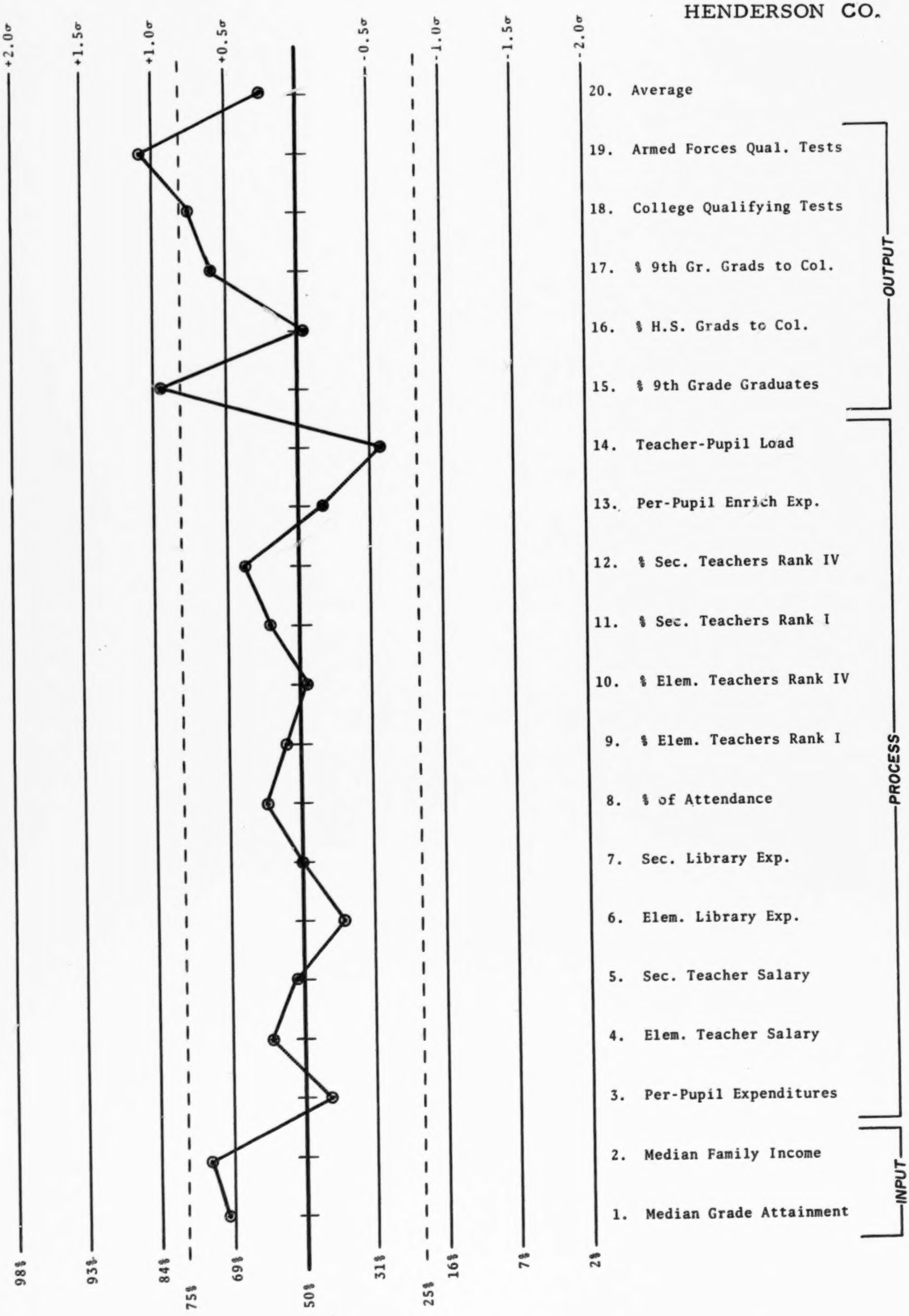
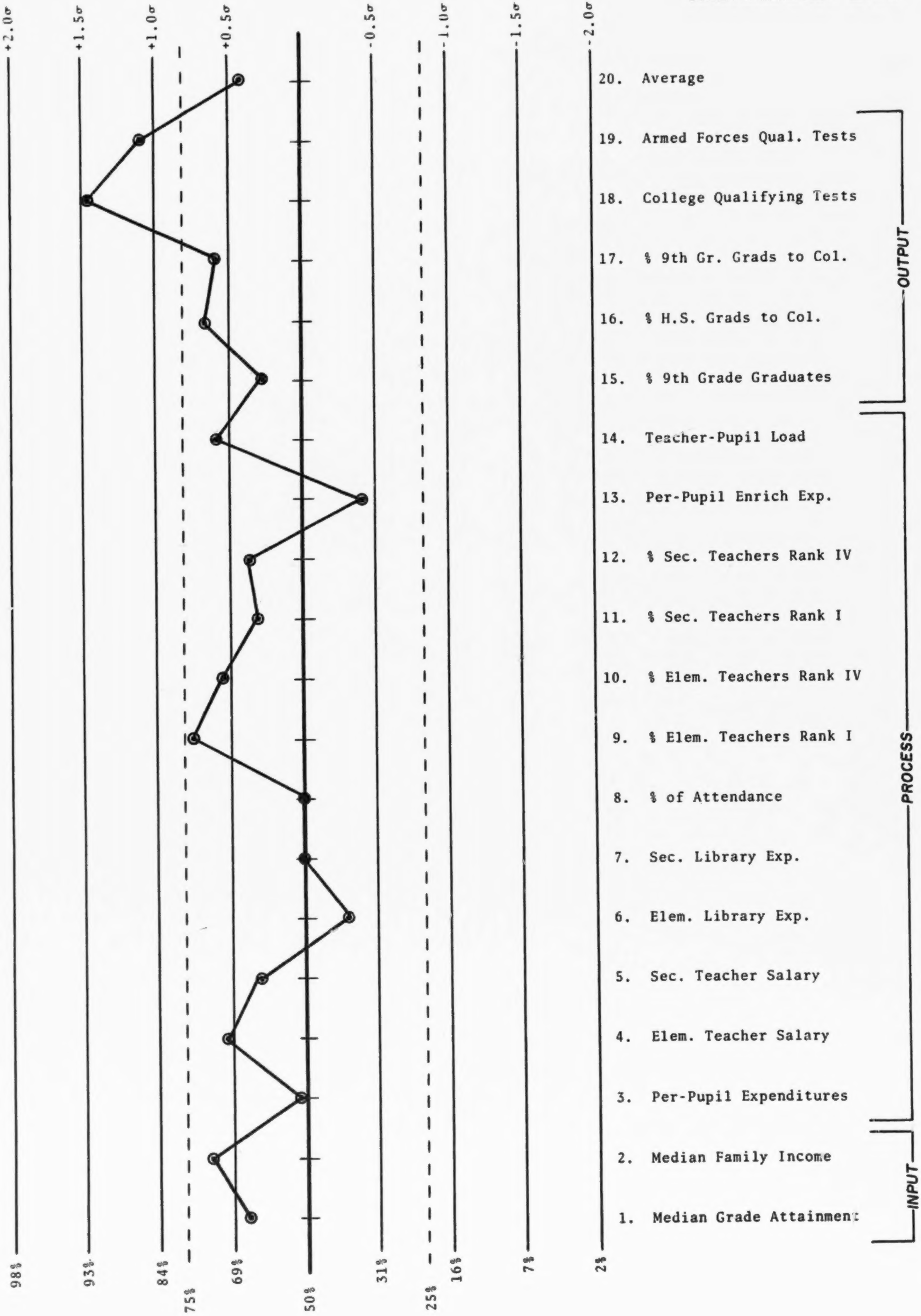
HENDERSON CO.



HENDERSON IND.



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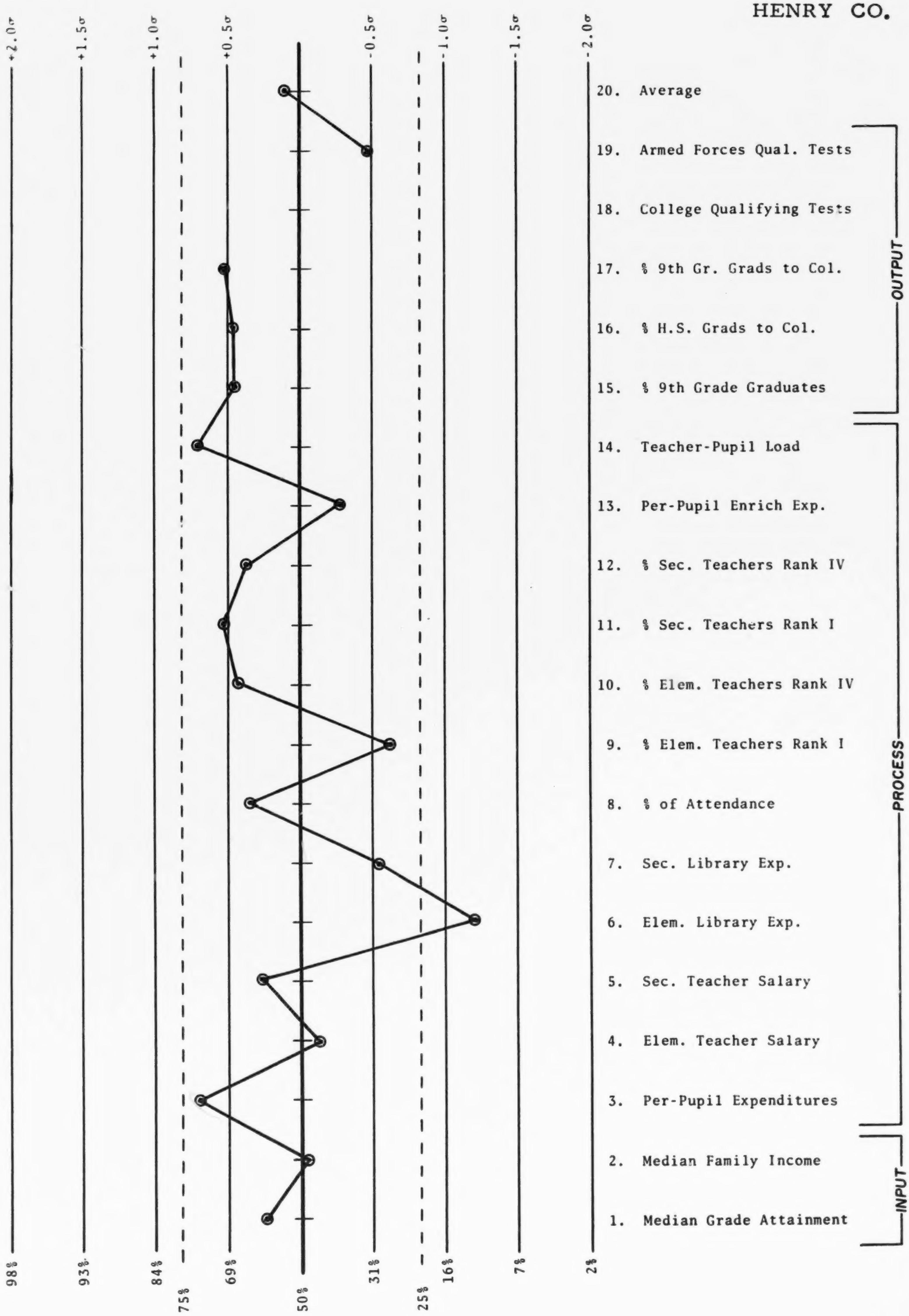
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1. Median Grade Attainment
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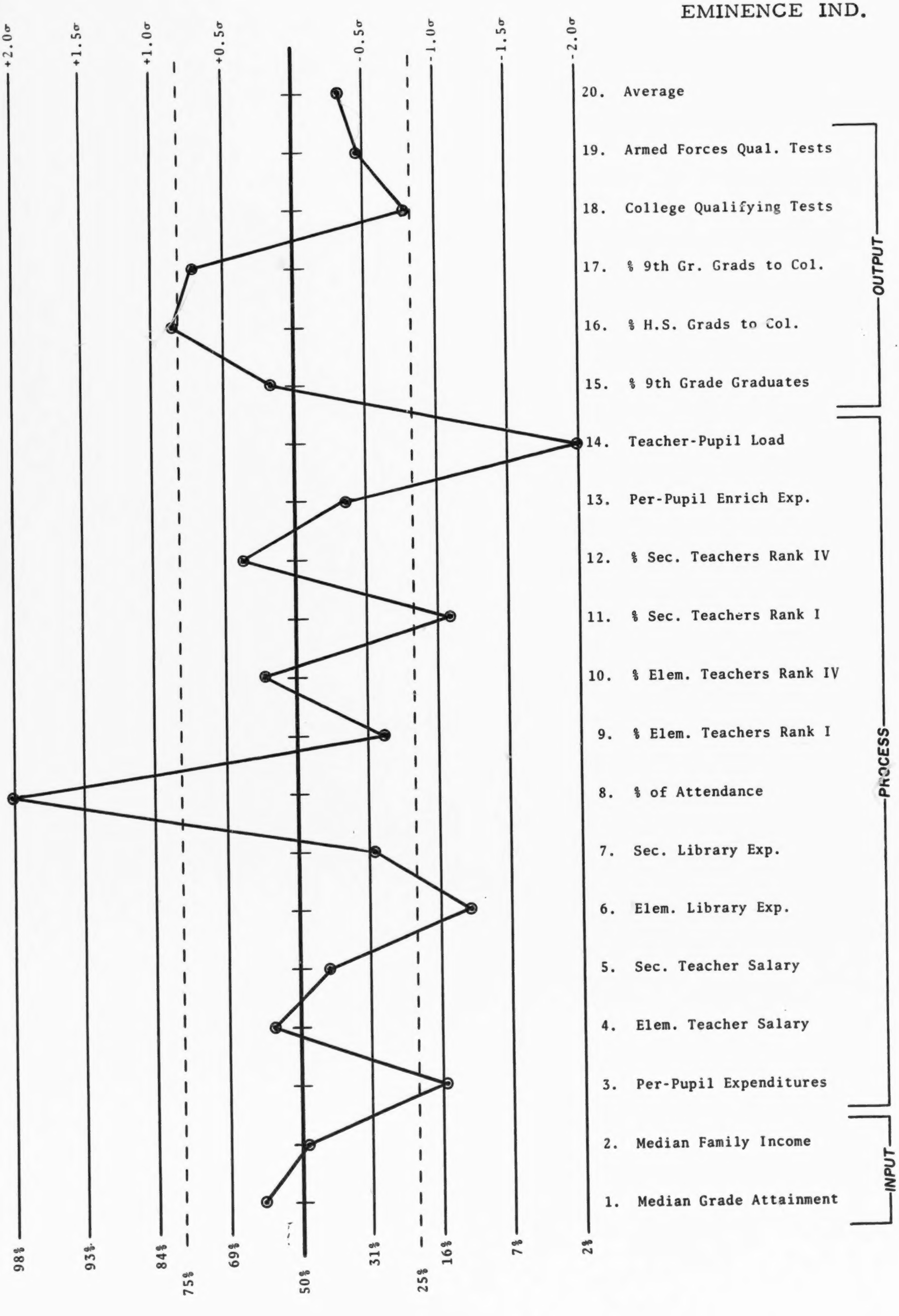
EMINENCE IND.



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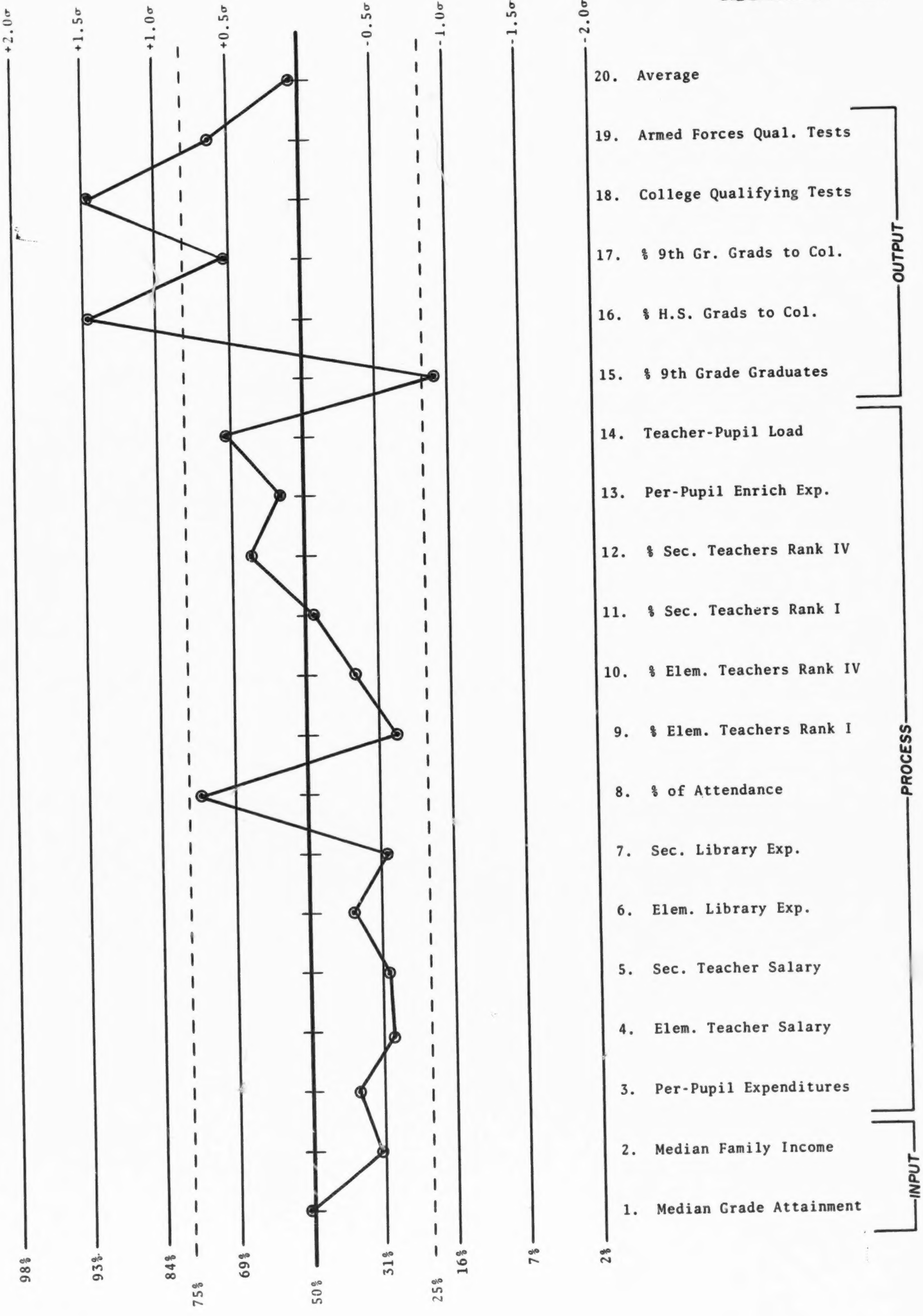
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8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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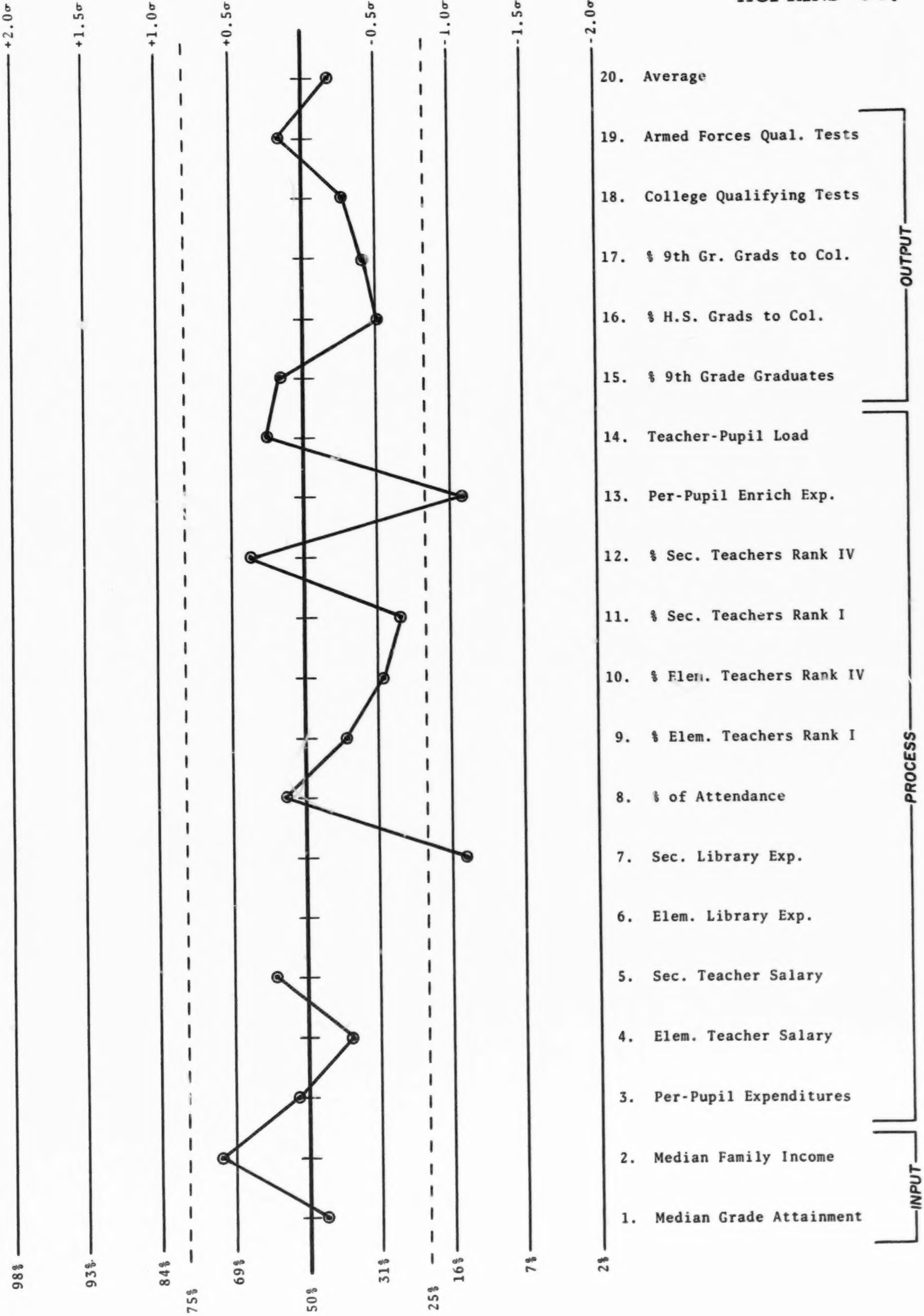
HOPKINS CO.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20. Average
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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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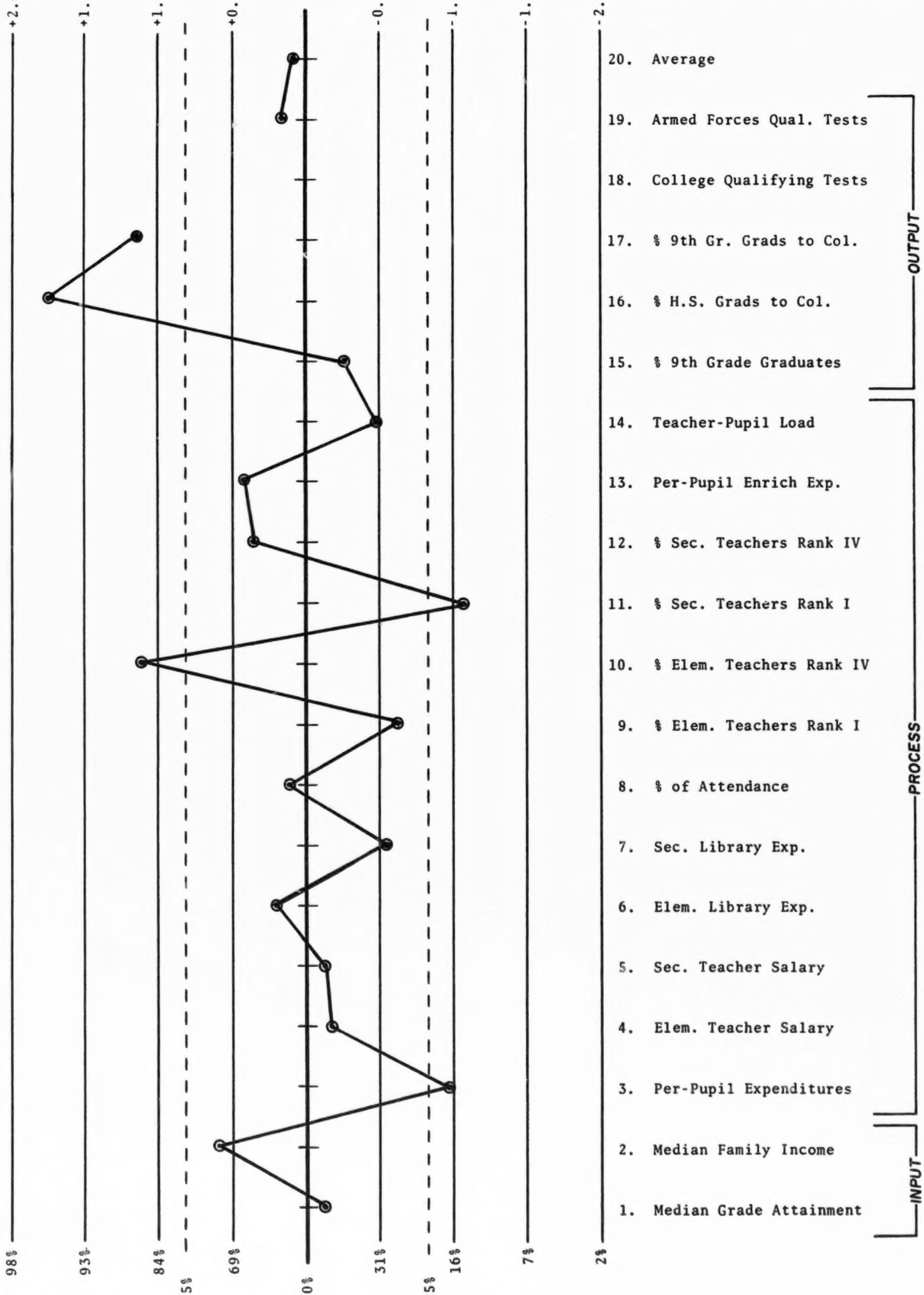
DAWSON SPRINGS IND.



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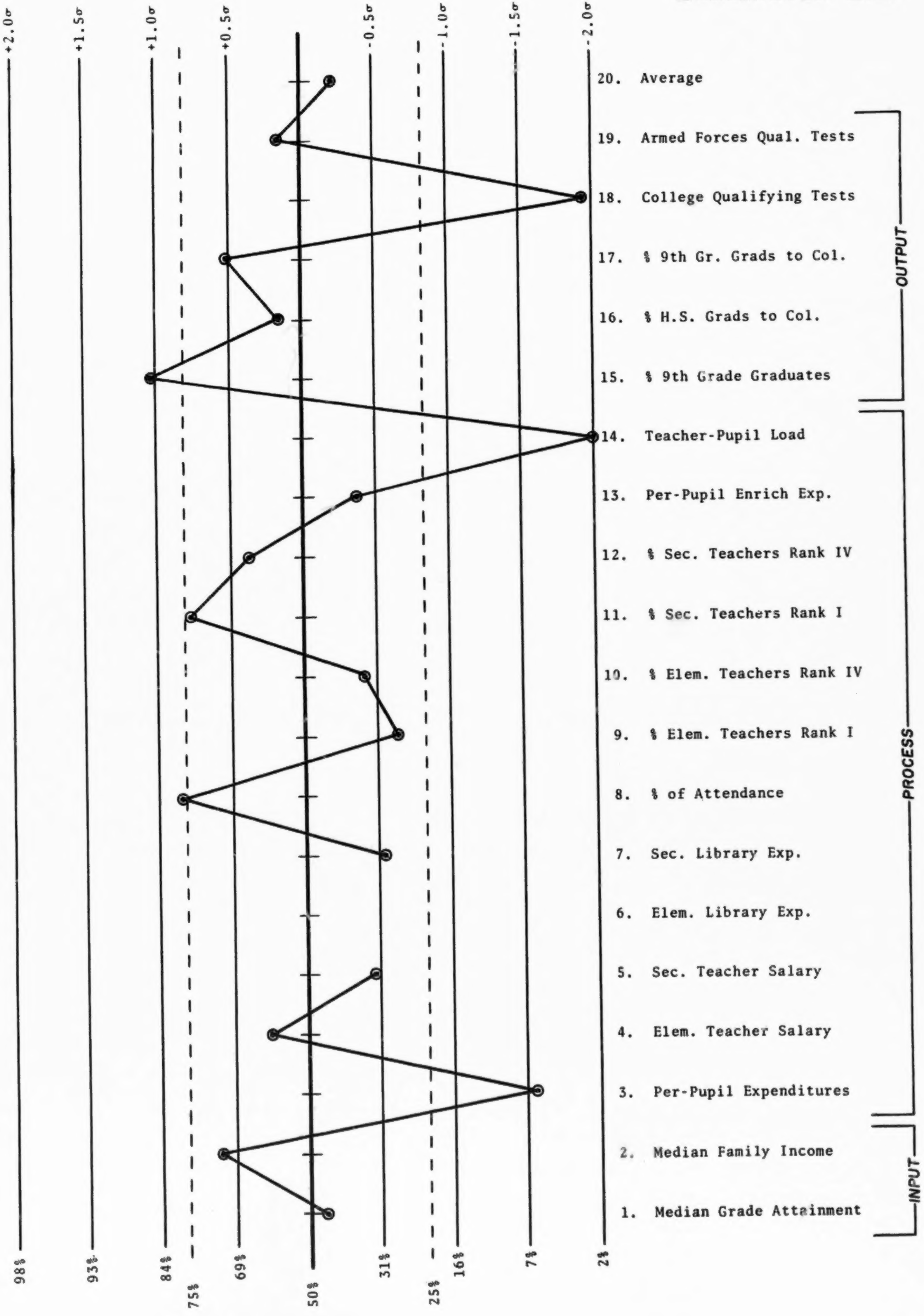

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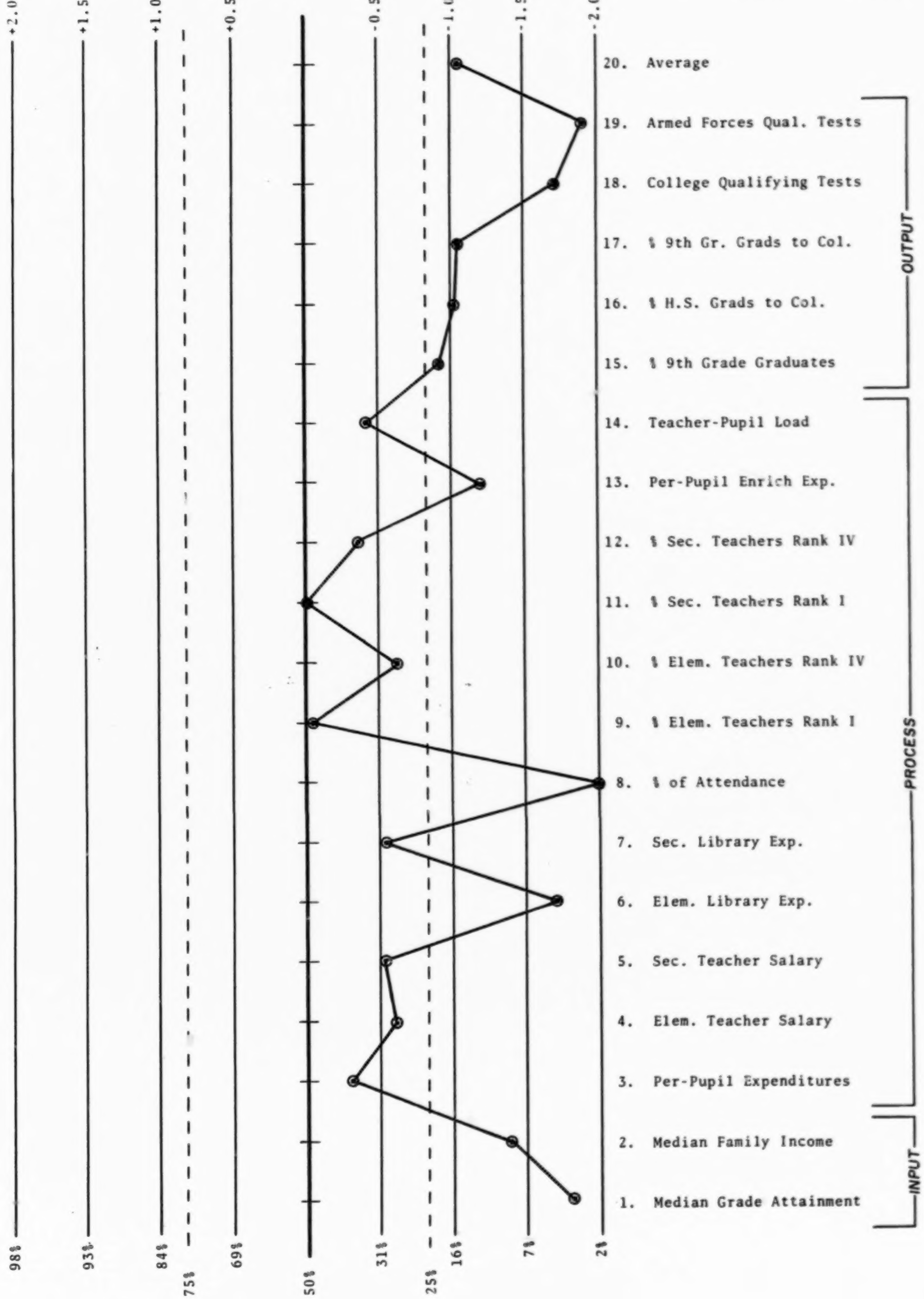
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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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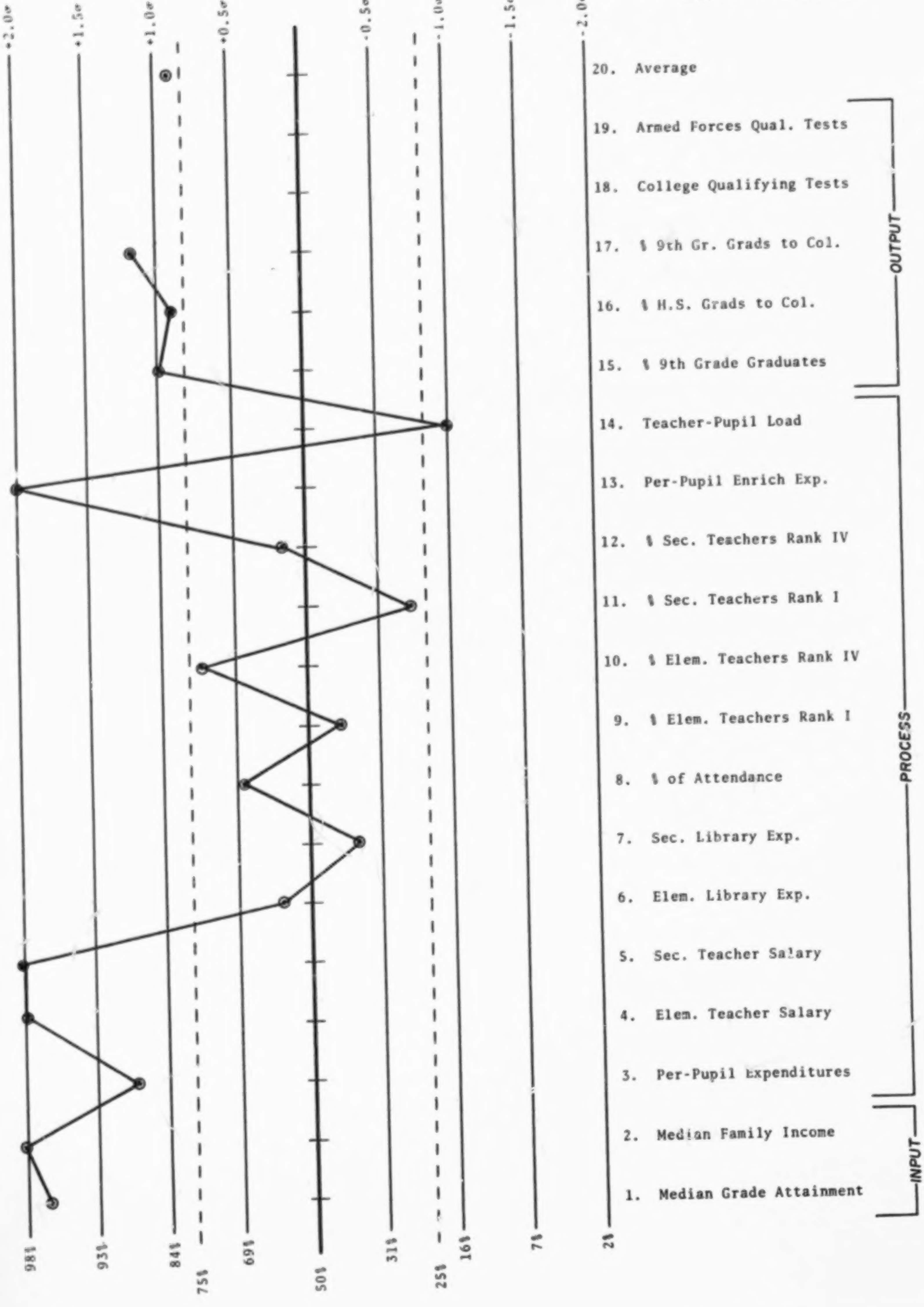
JEFFERSON CO.



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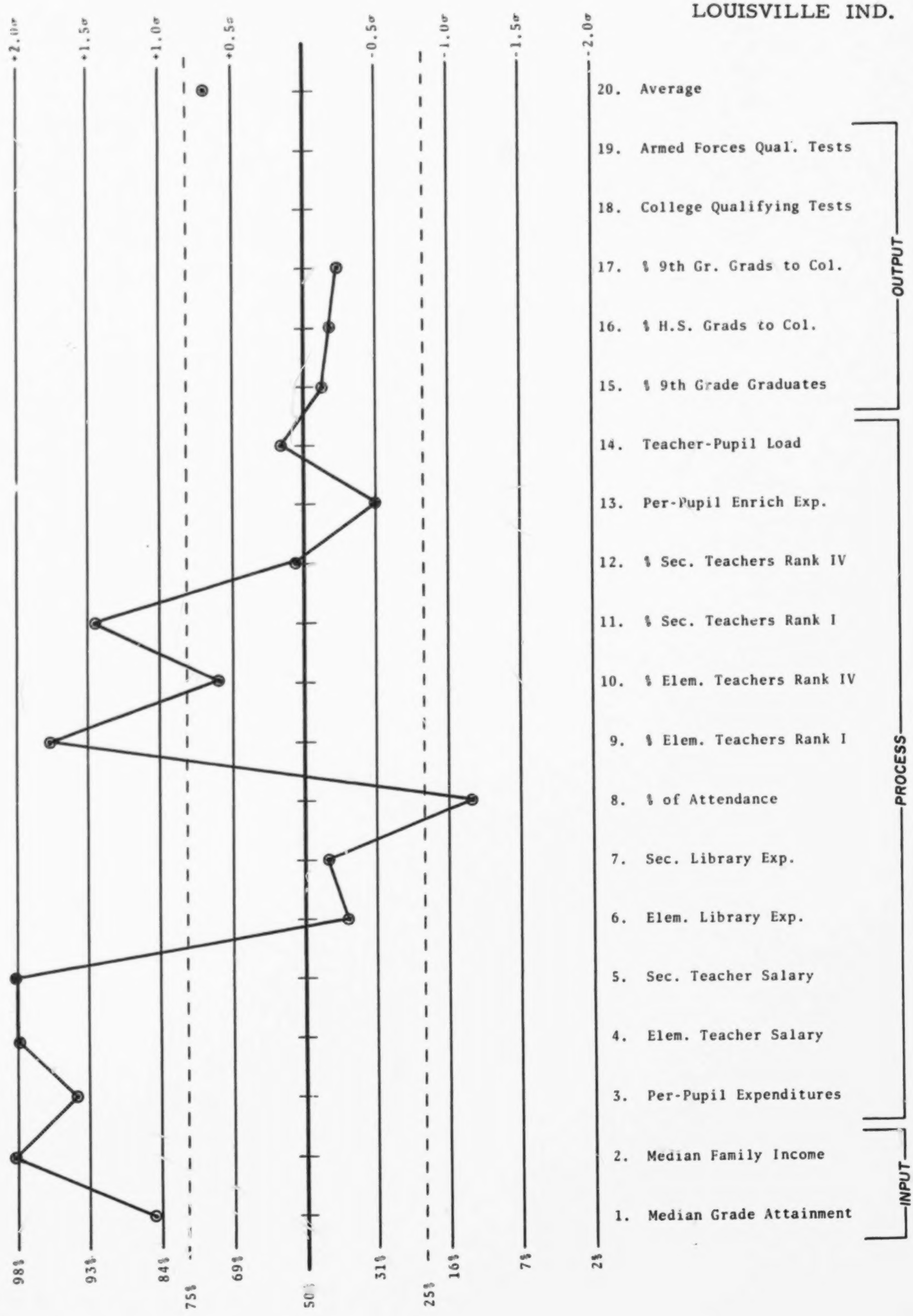

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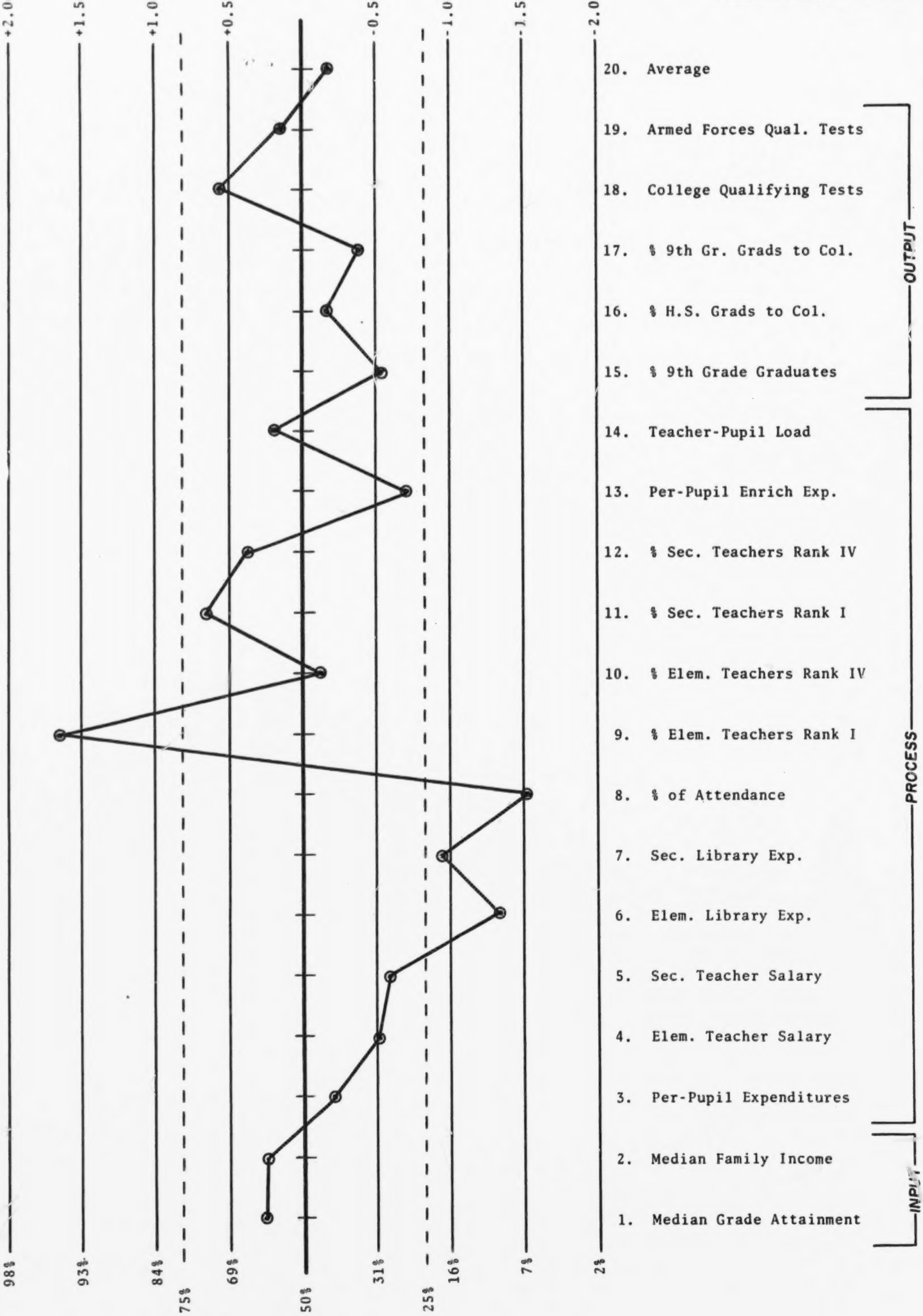

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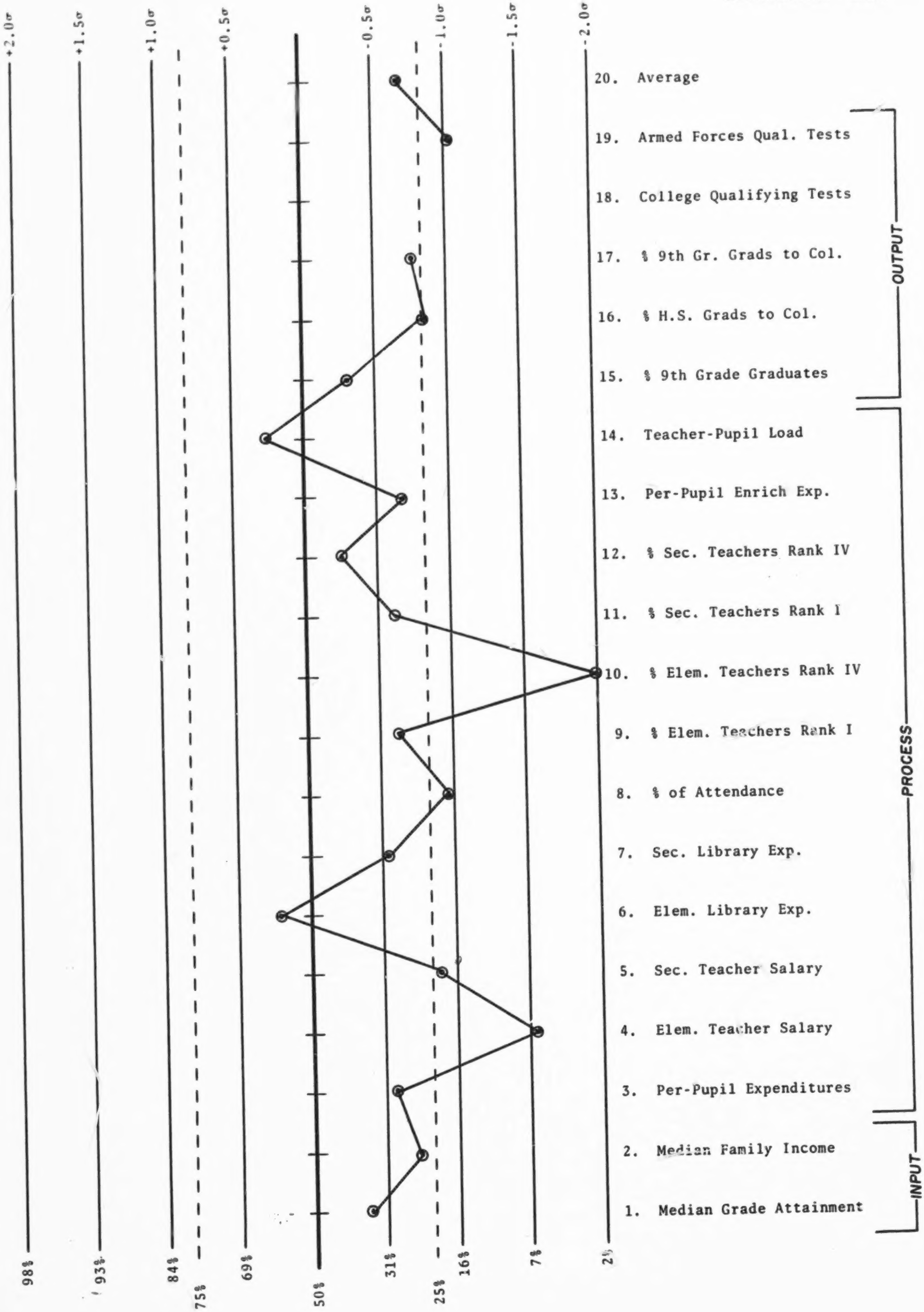
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18. College Qualifying Tests
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16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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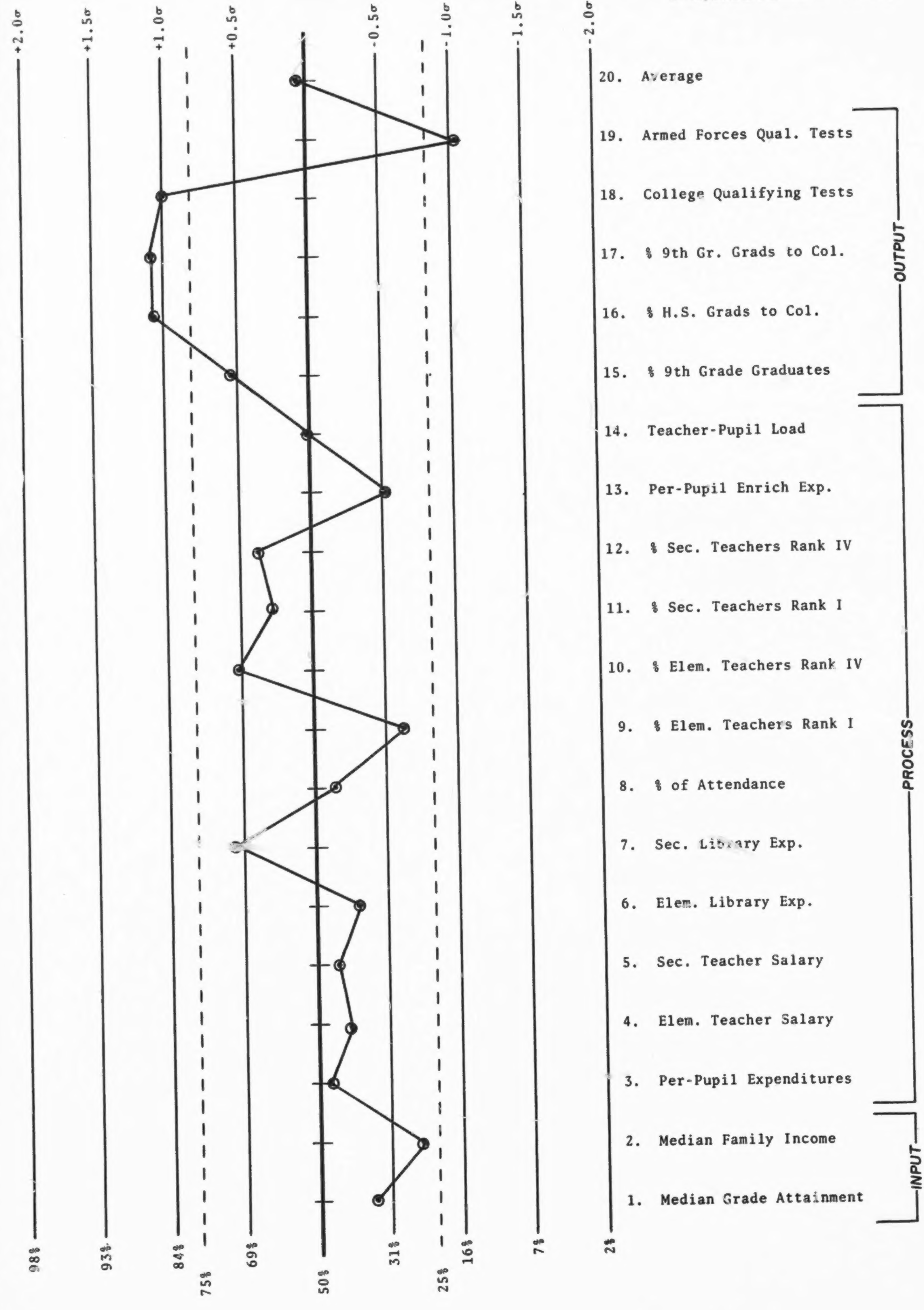
PAINTSVILLE IND.



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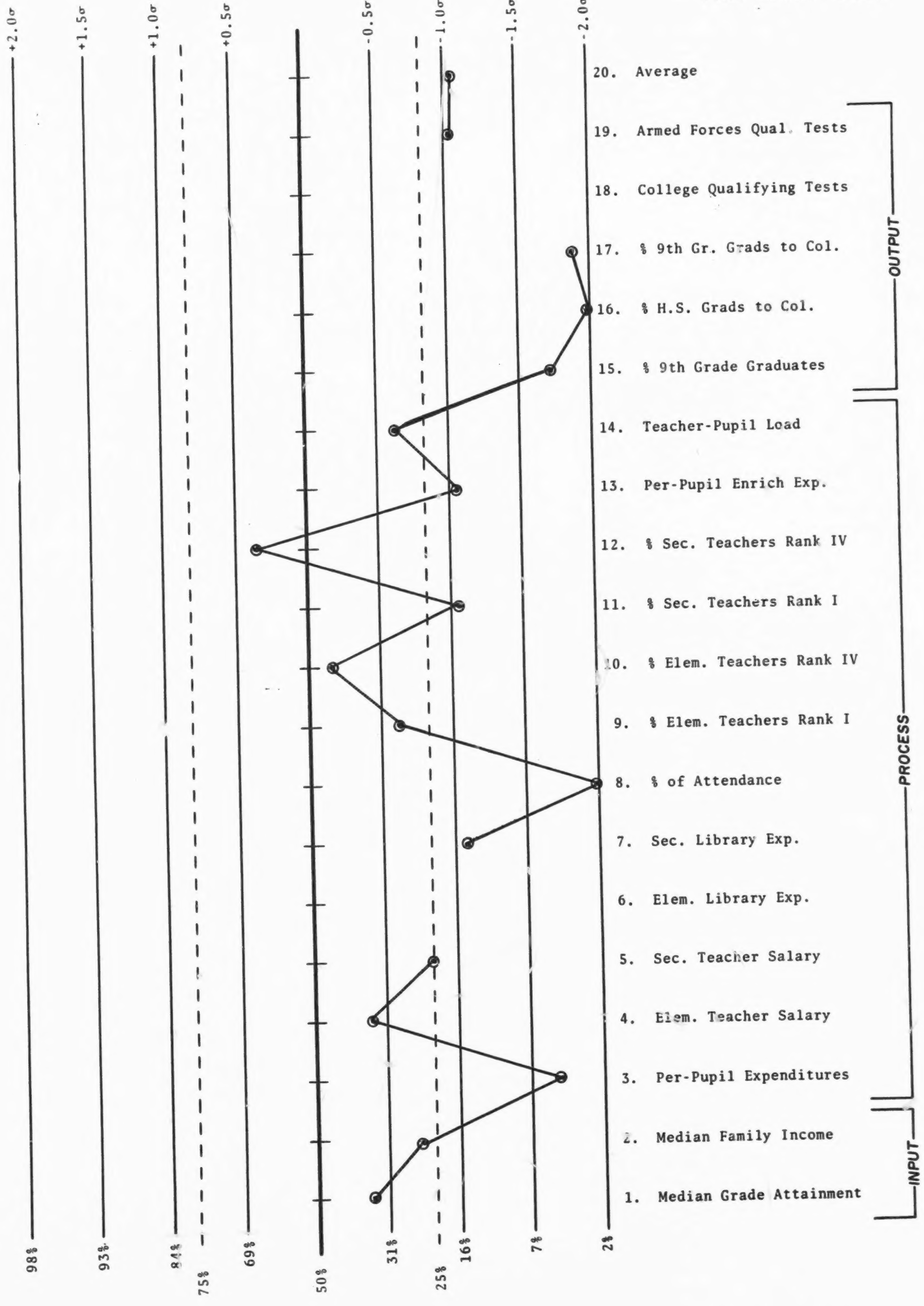
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15. % 9th Grade Graduates
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7. Sec. Library Exp.
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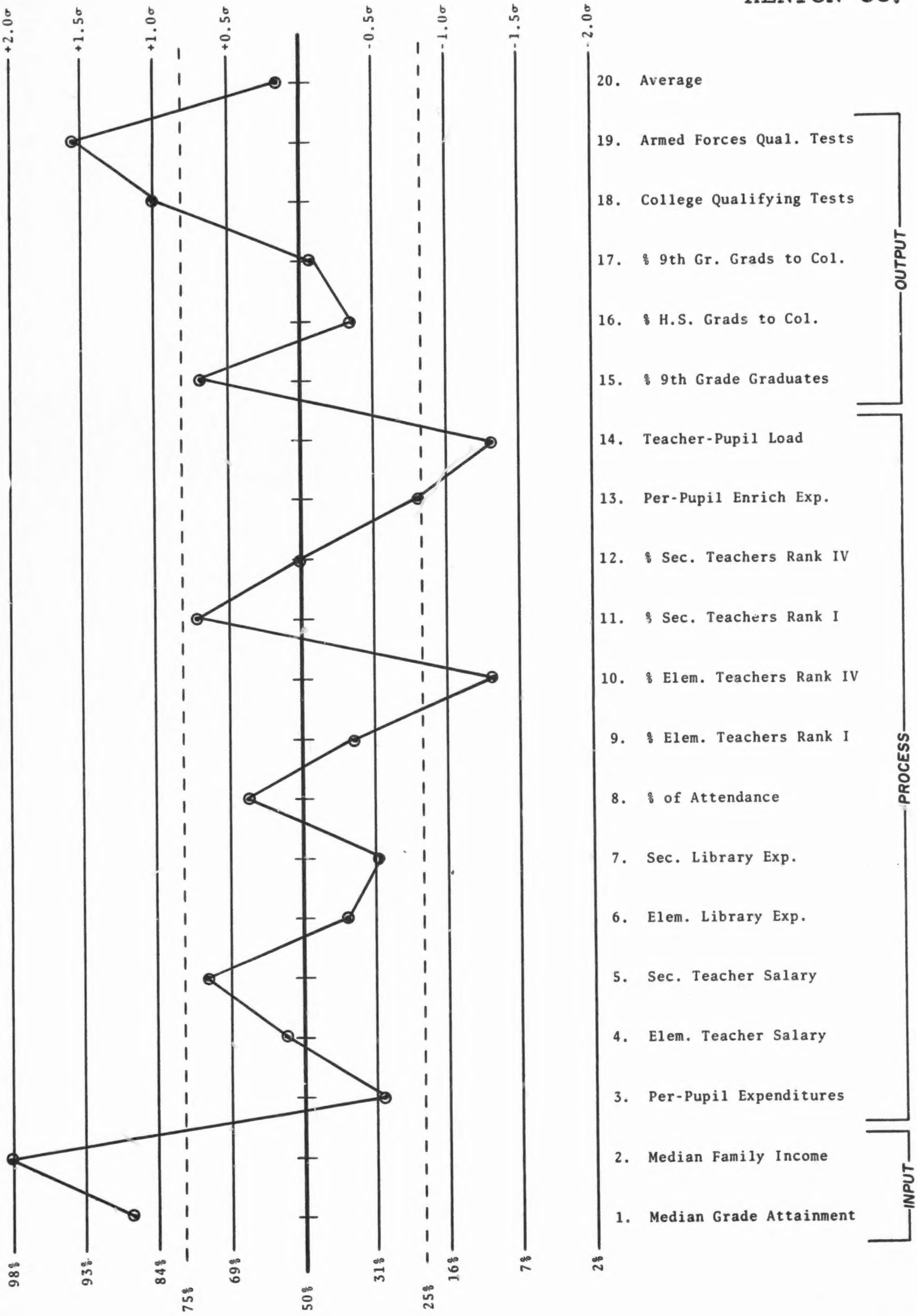
KENTON CO.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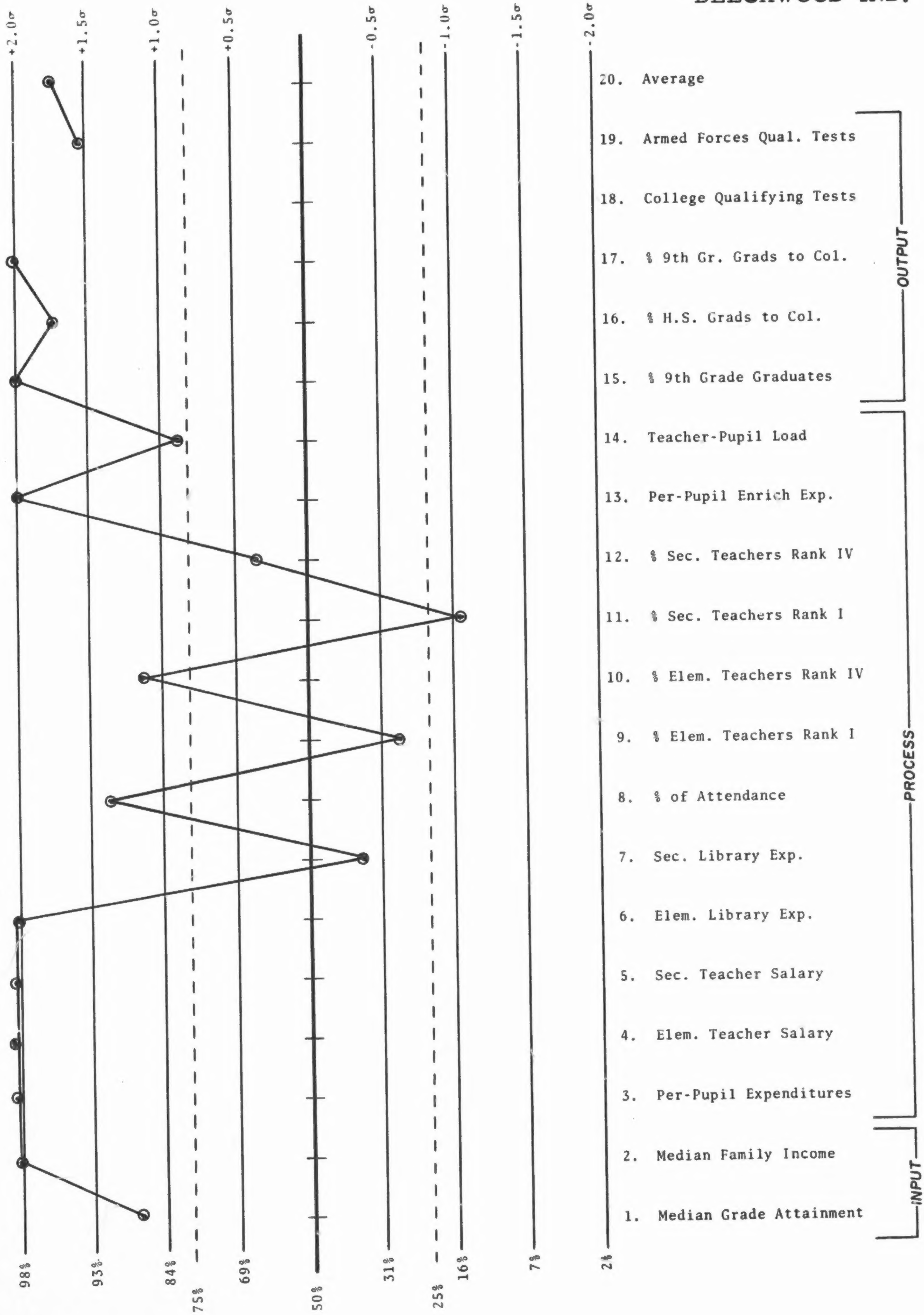
BEECHWOOD IND.



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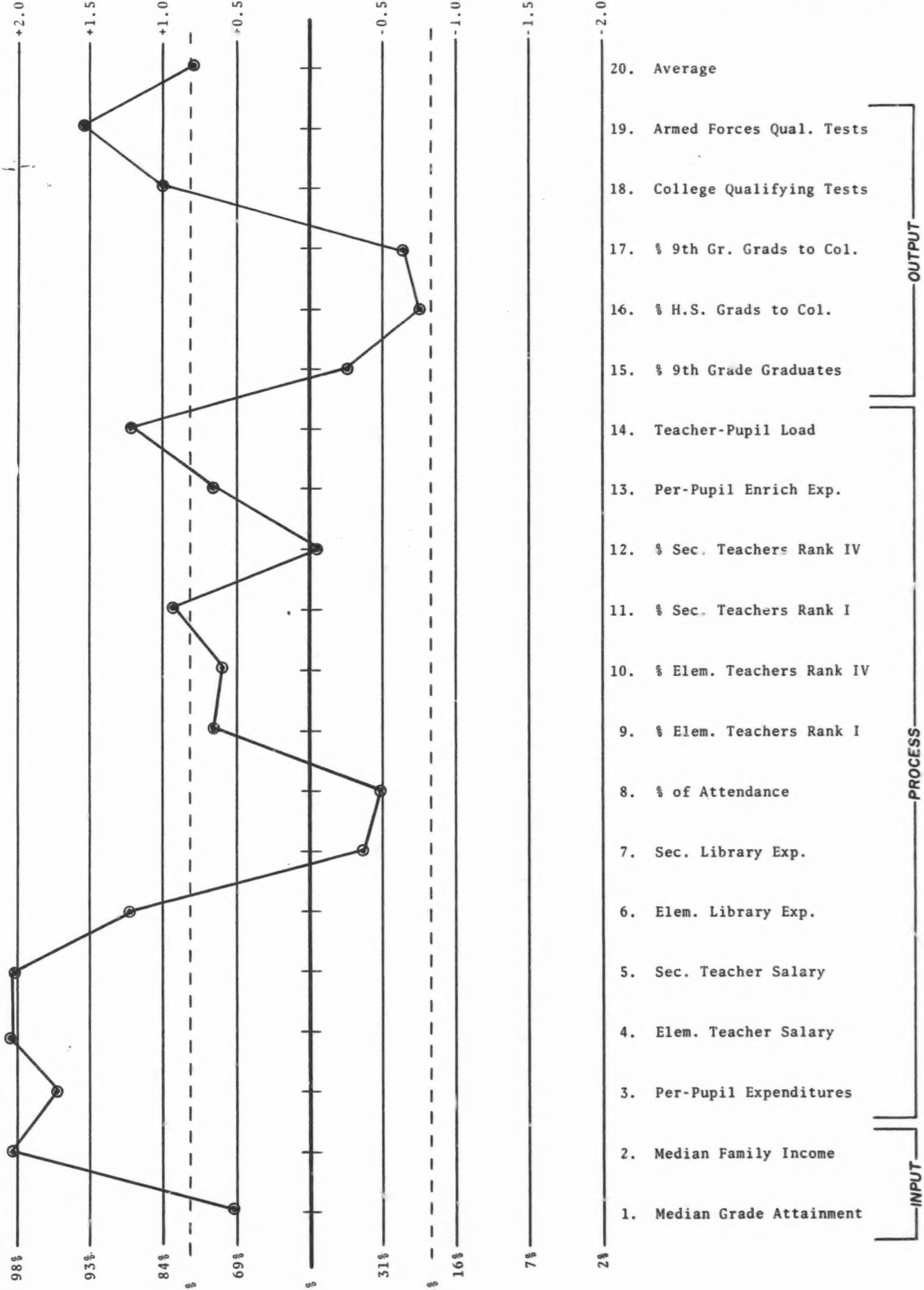

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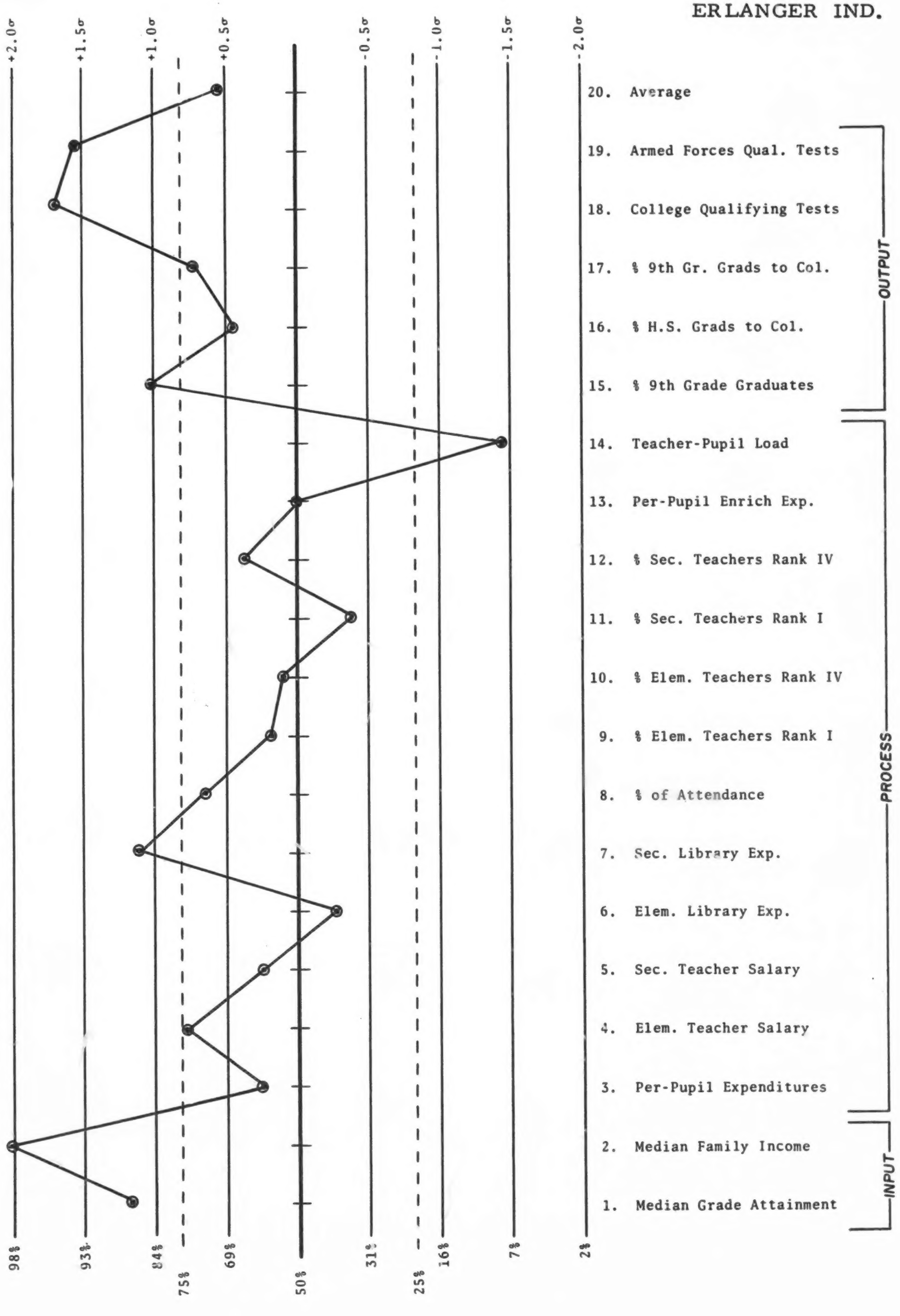

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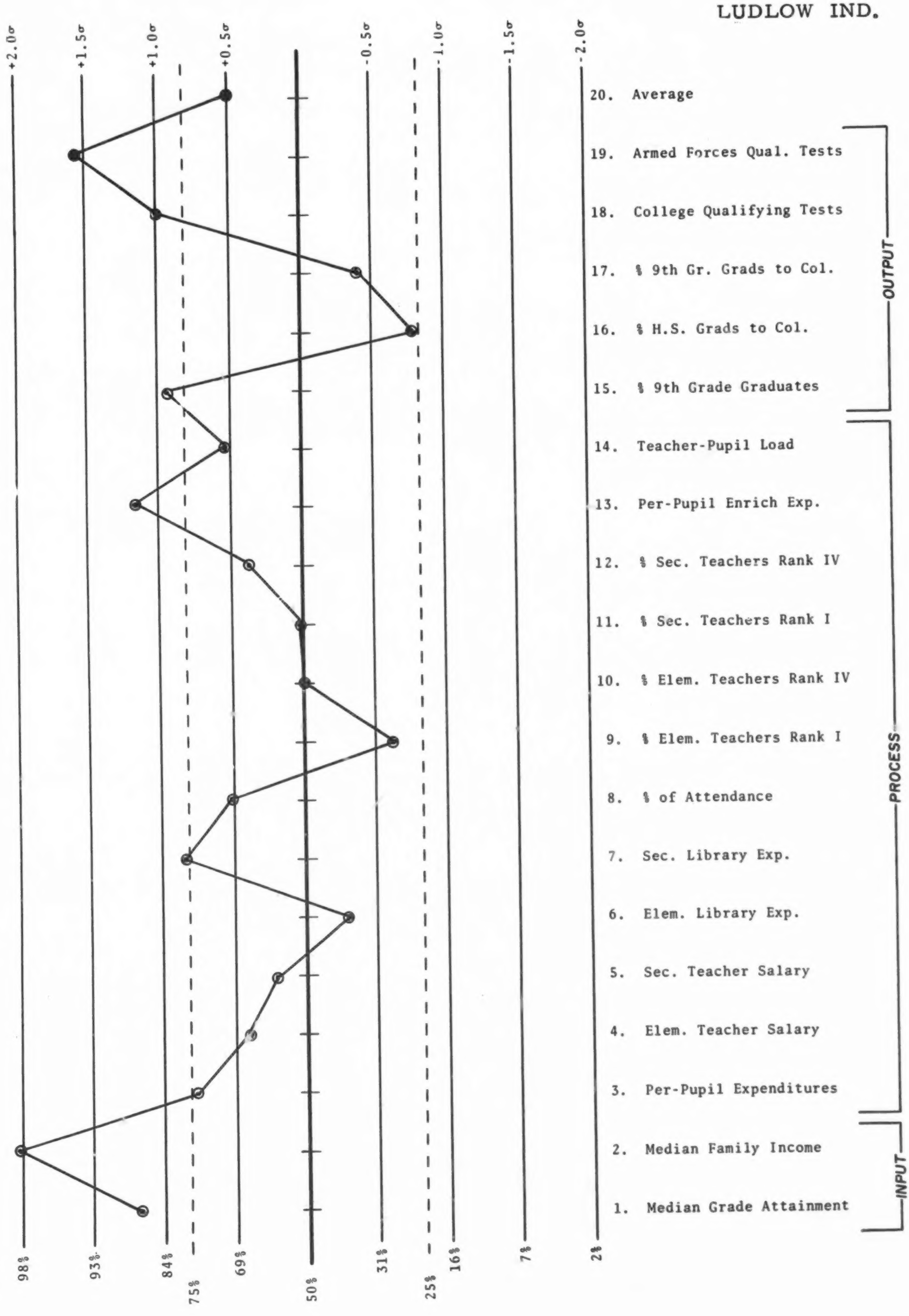
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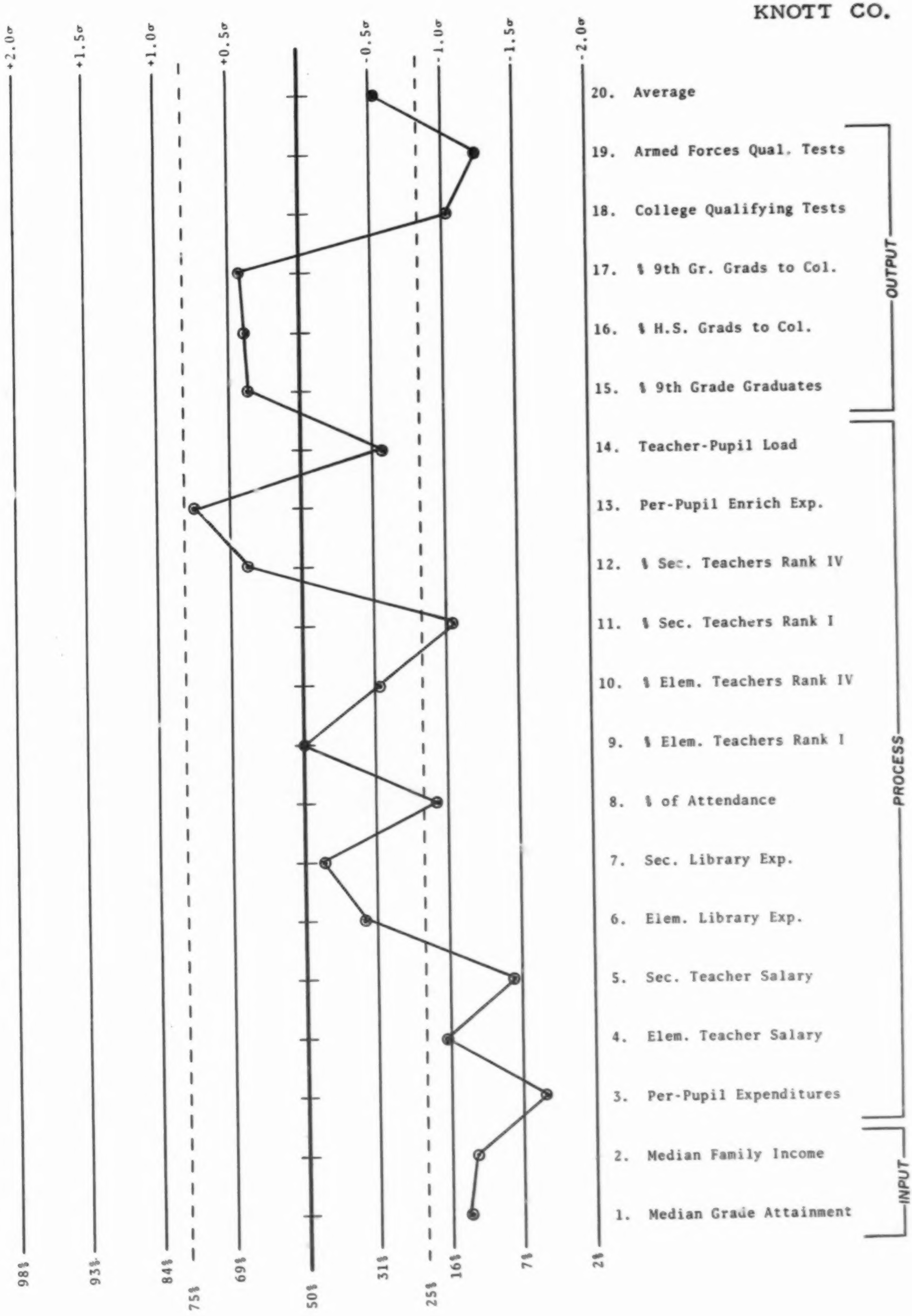
KNOTT CO.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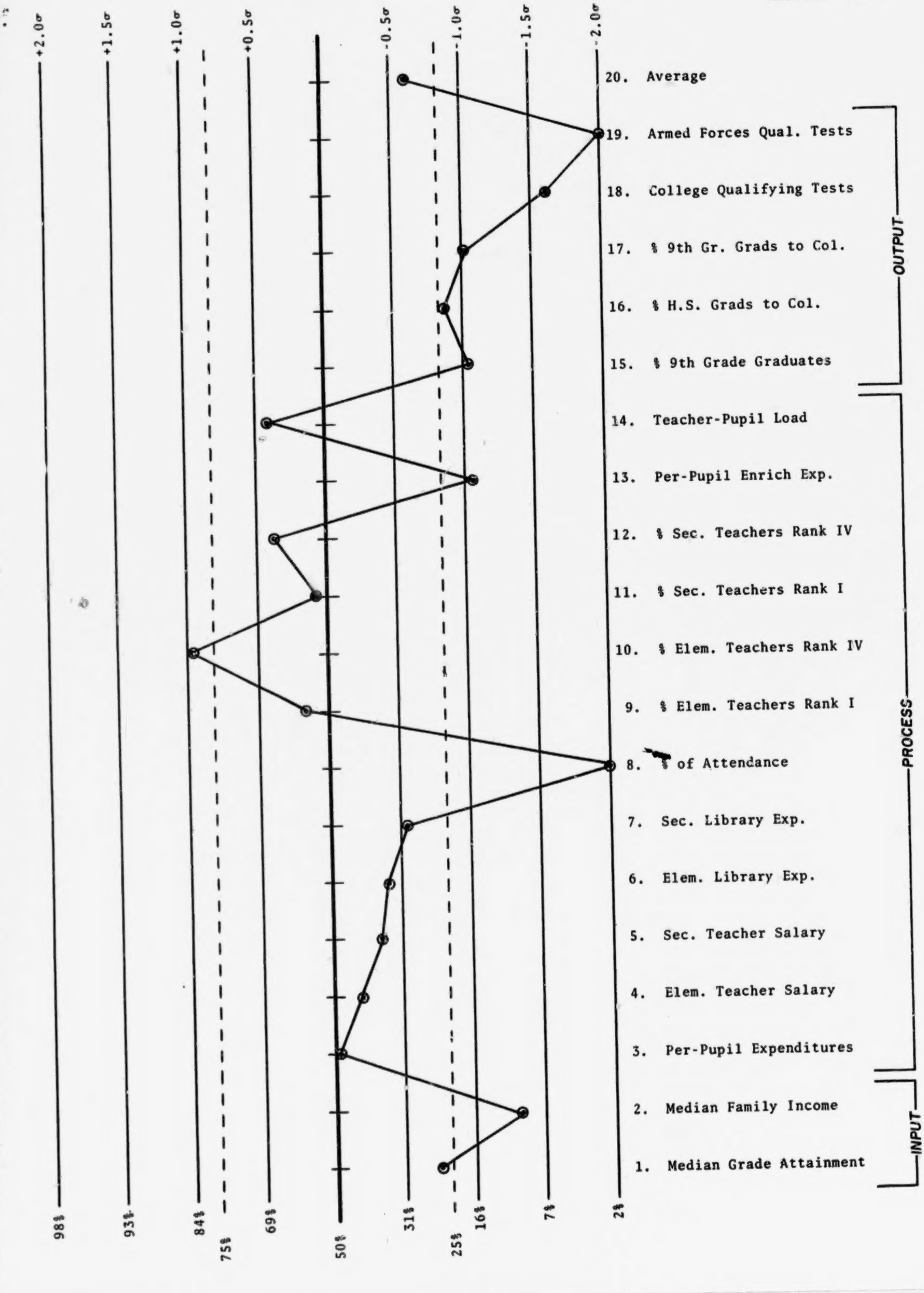
KNOX CO.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3. Per-Pupil Expenditures
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1. Median Grade Attainment
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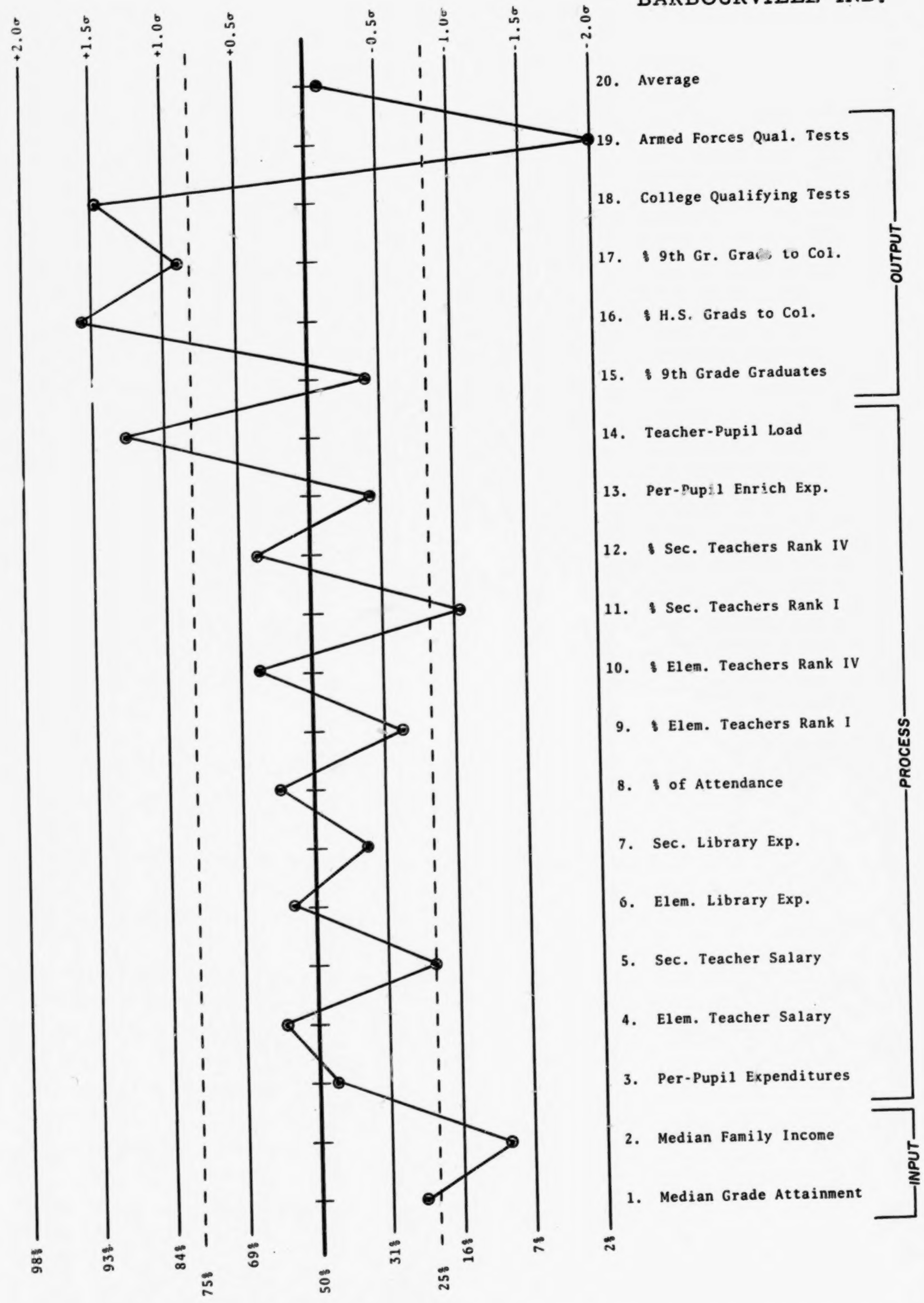
BARBOURVILLE IND.



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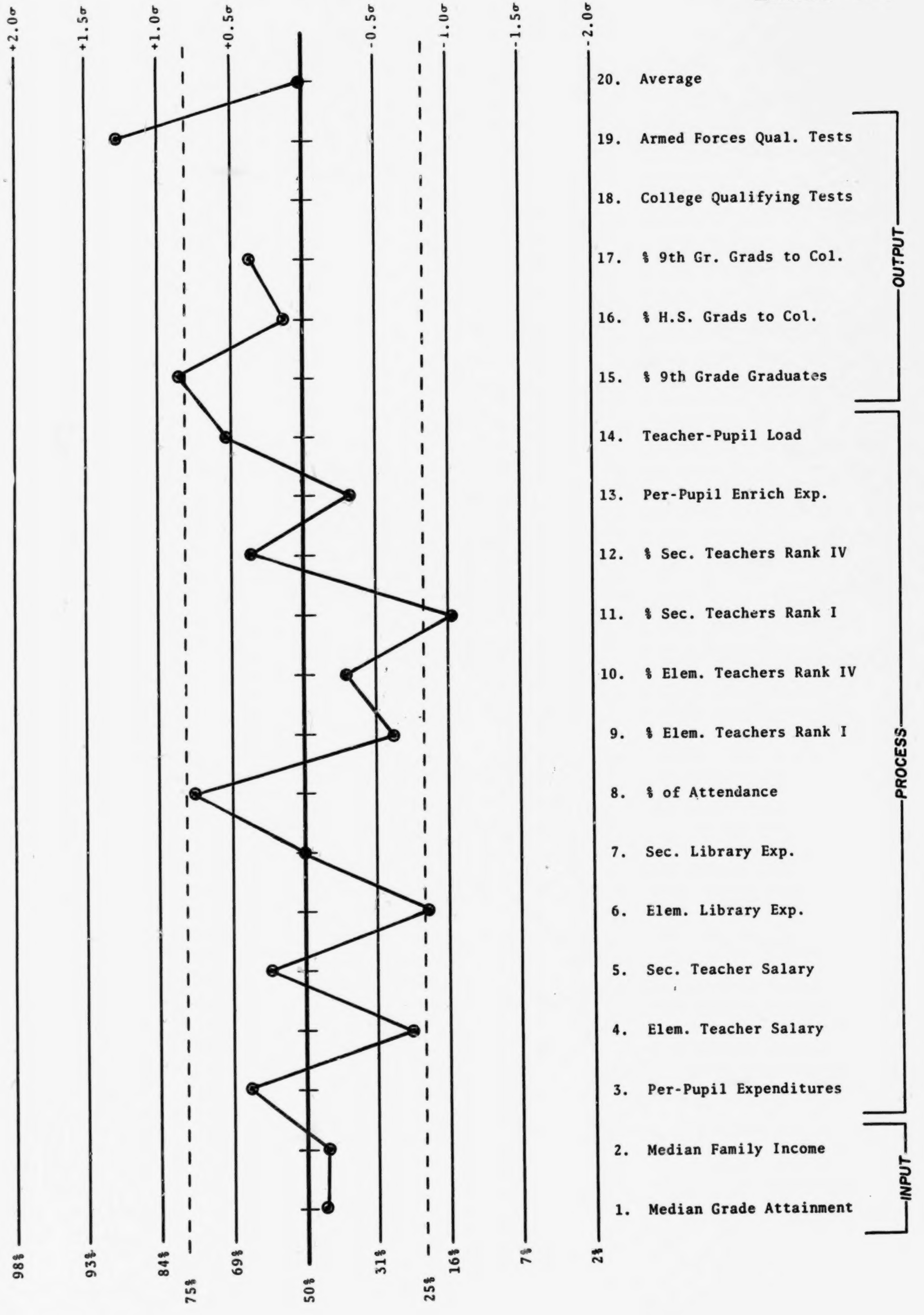
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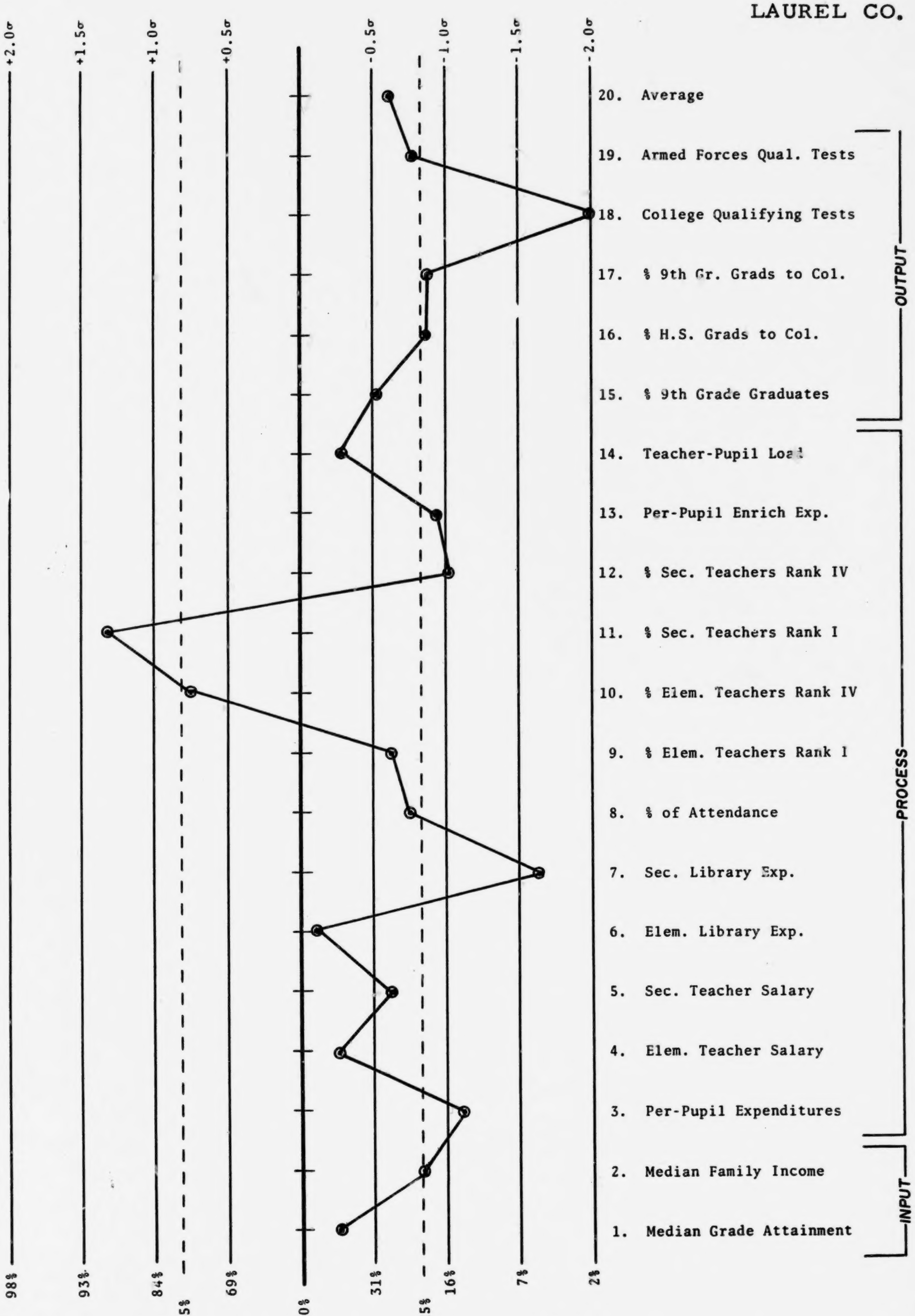
LAUREL CO.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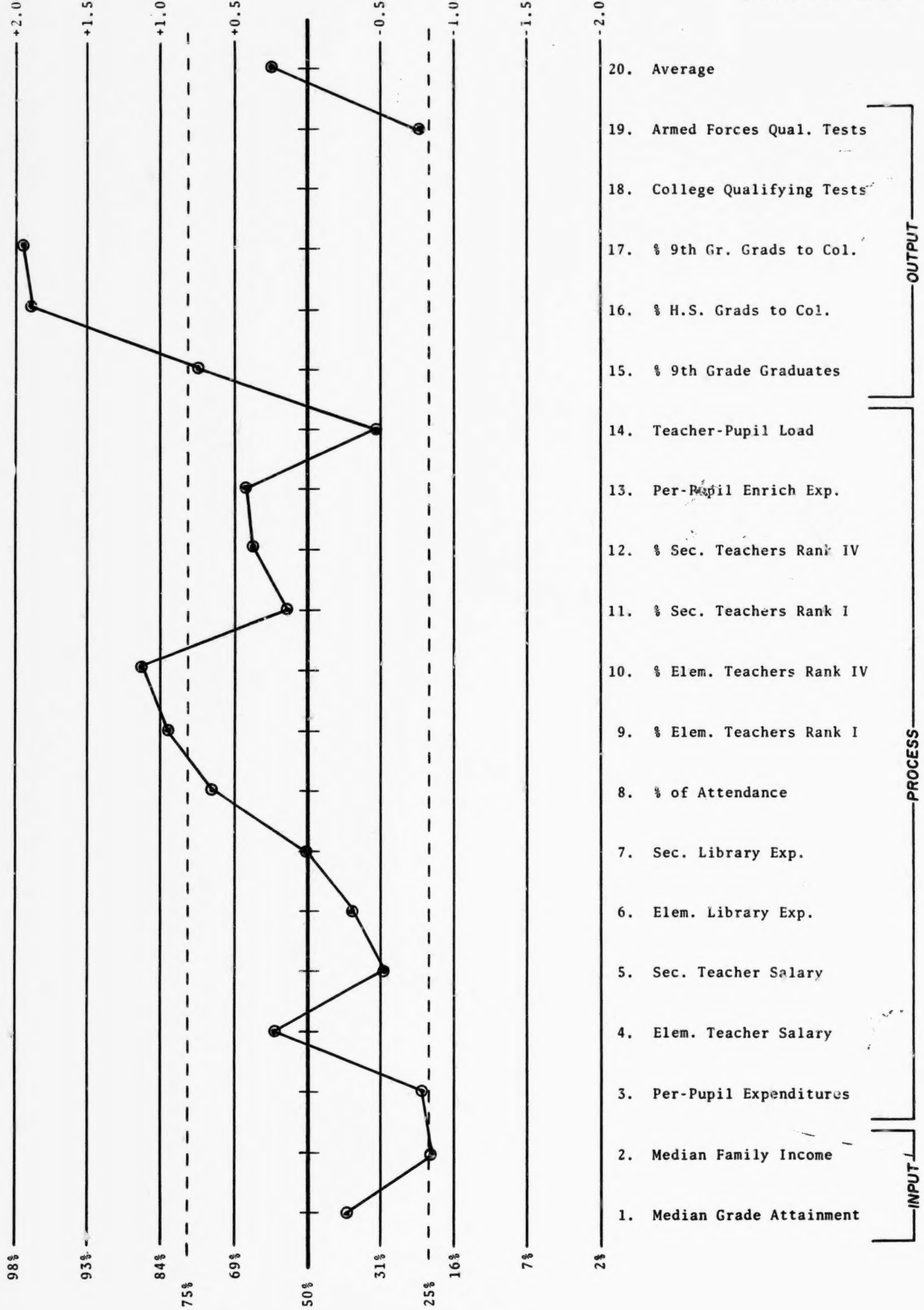
LONDON IND.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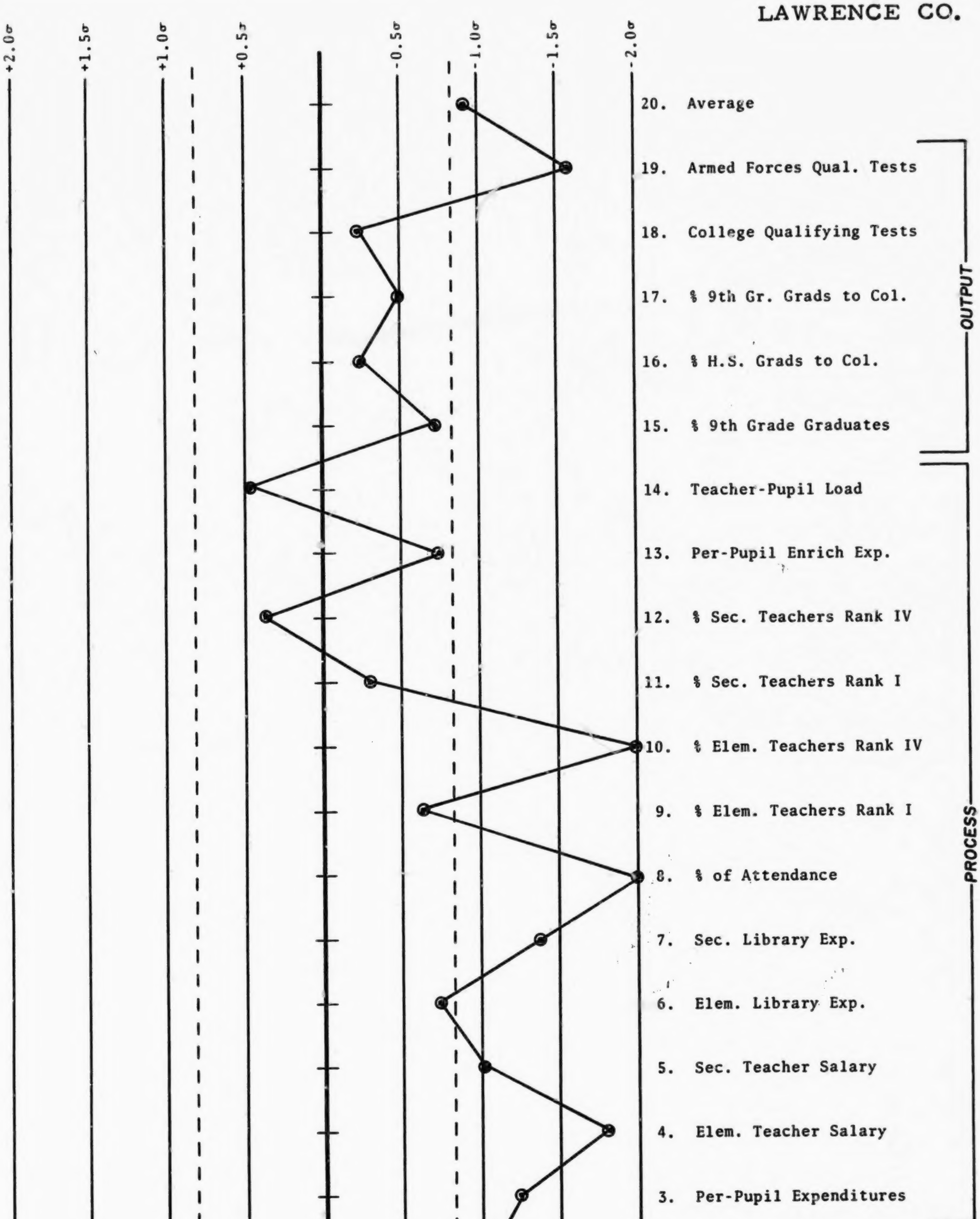
LAWRENCE CO.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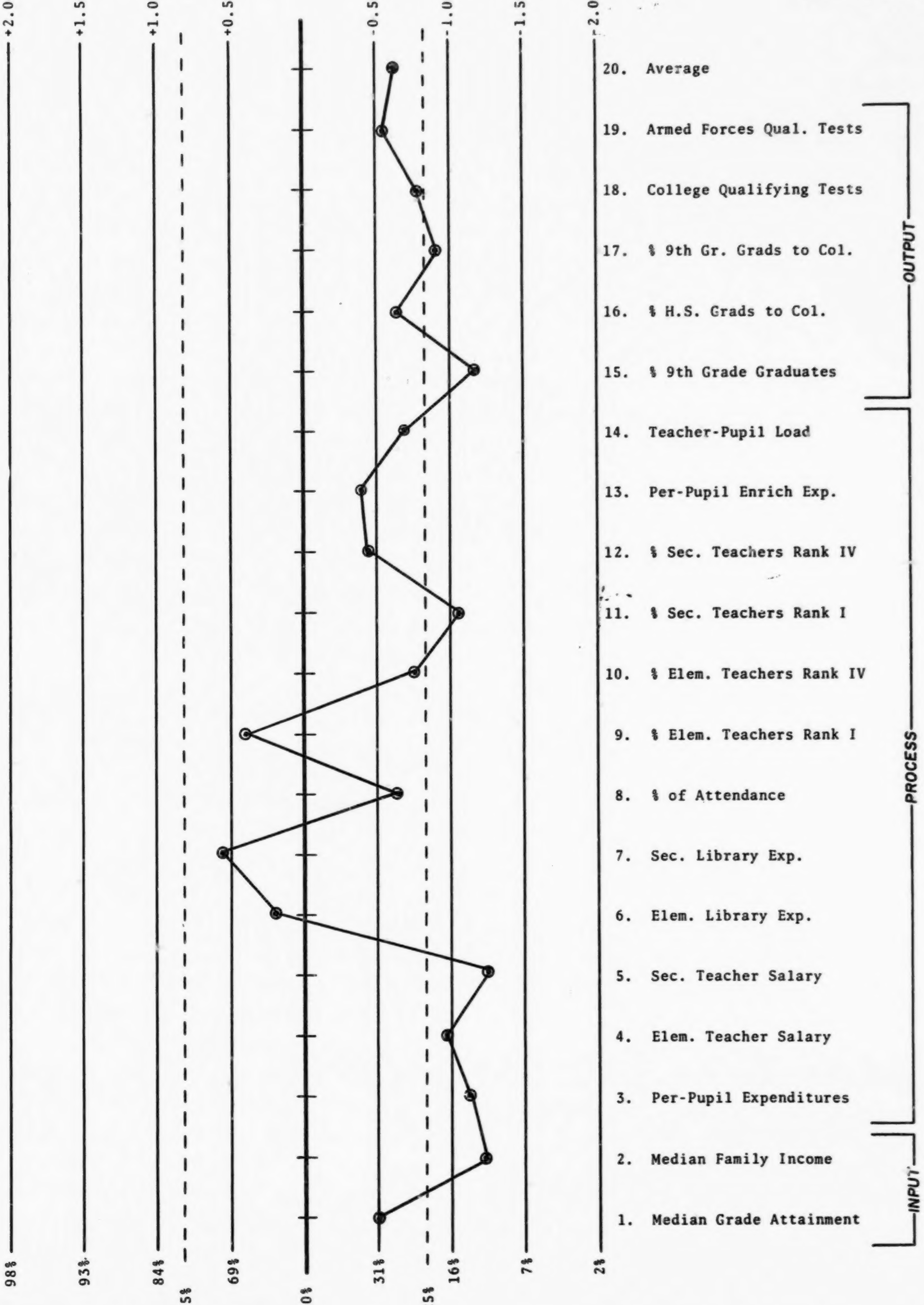
LEE CO.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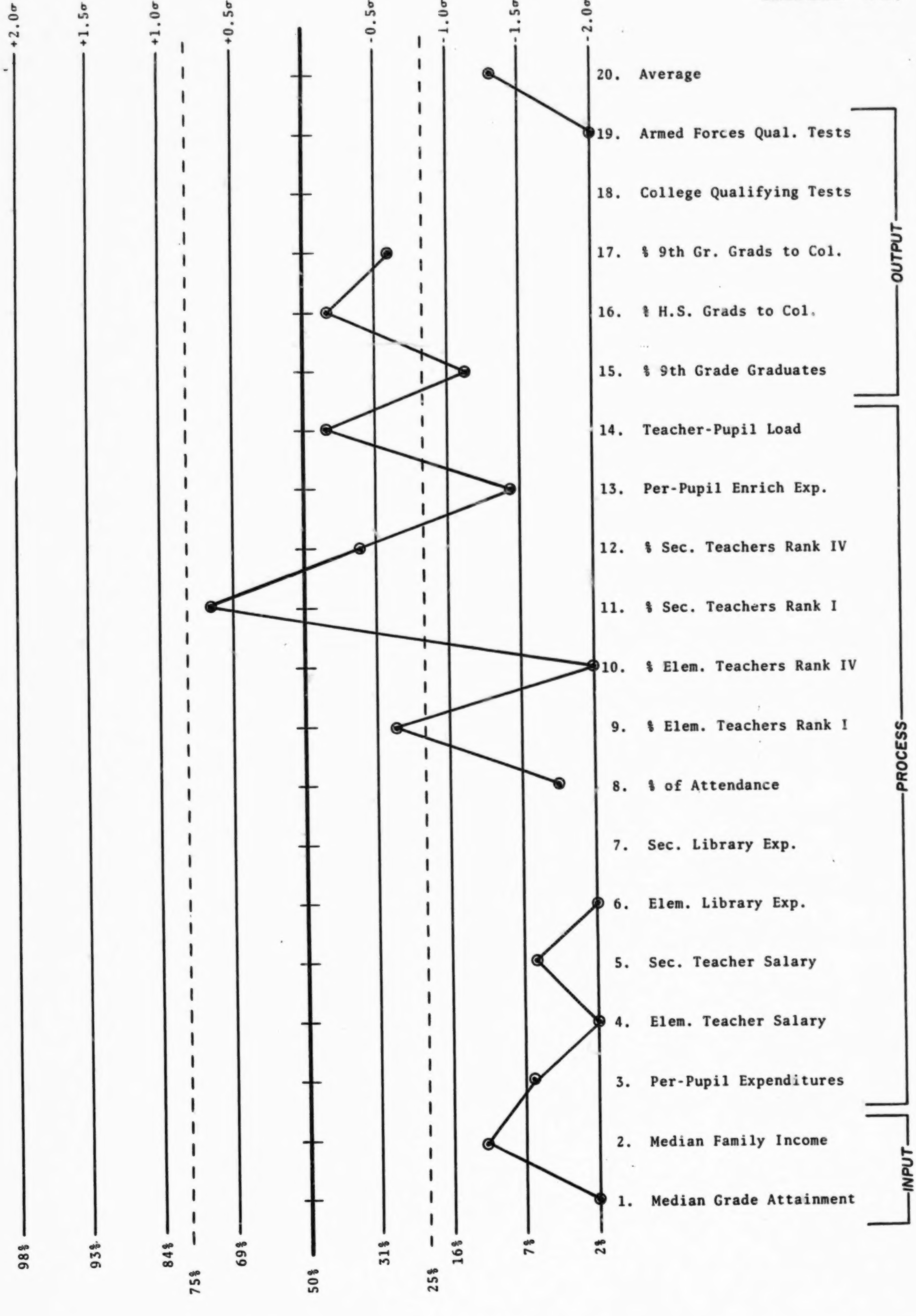
LESLIE CO.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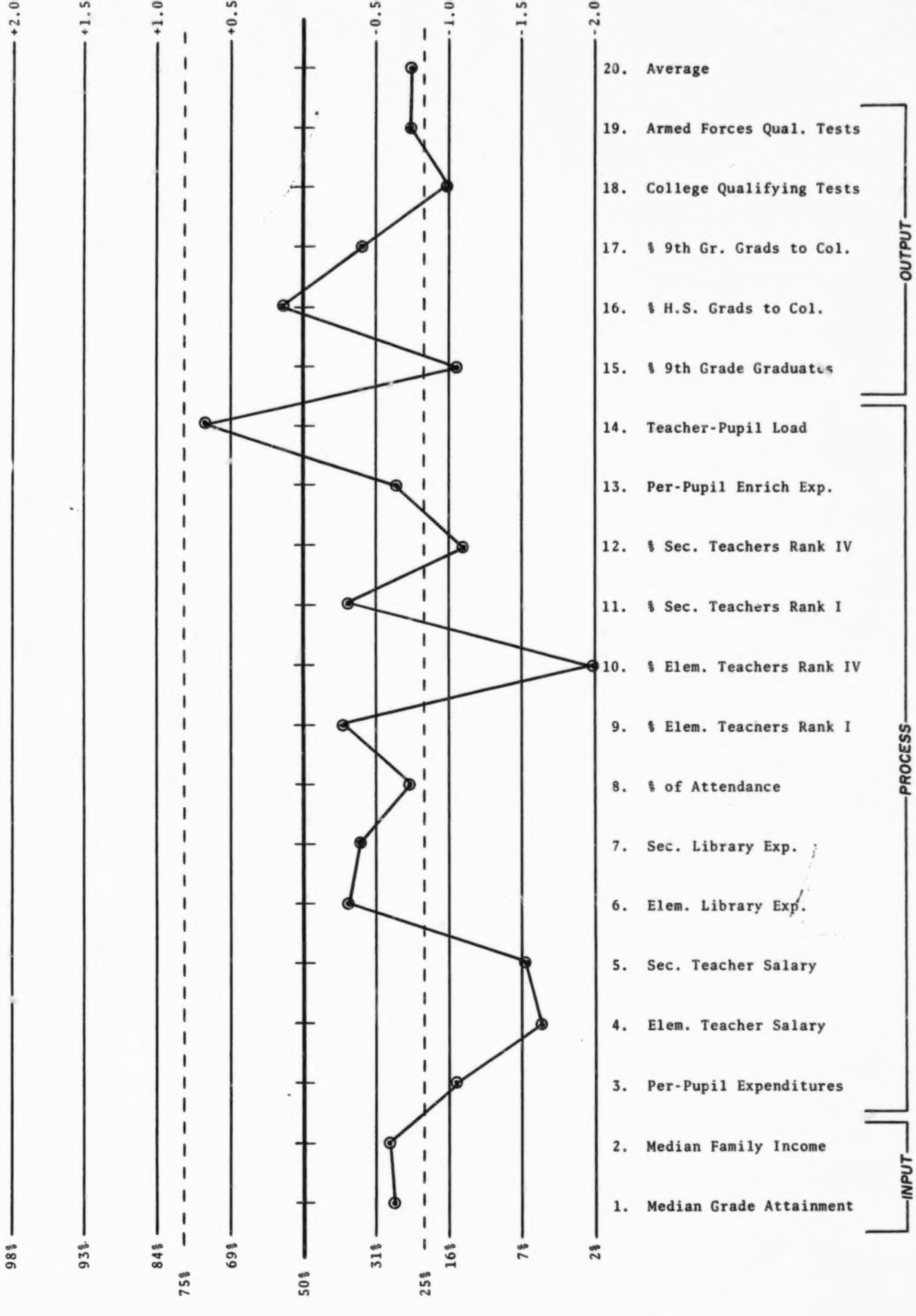
LETCHER CO.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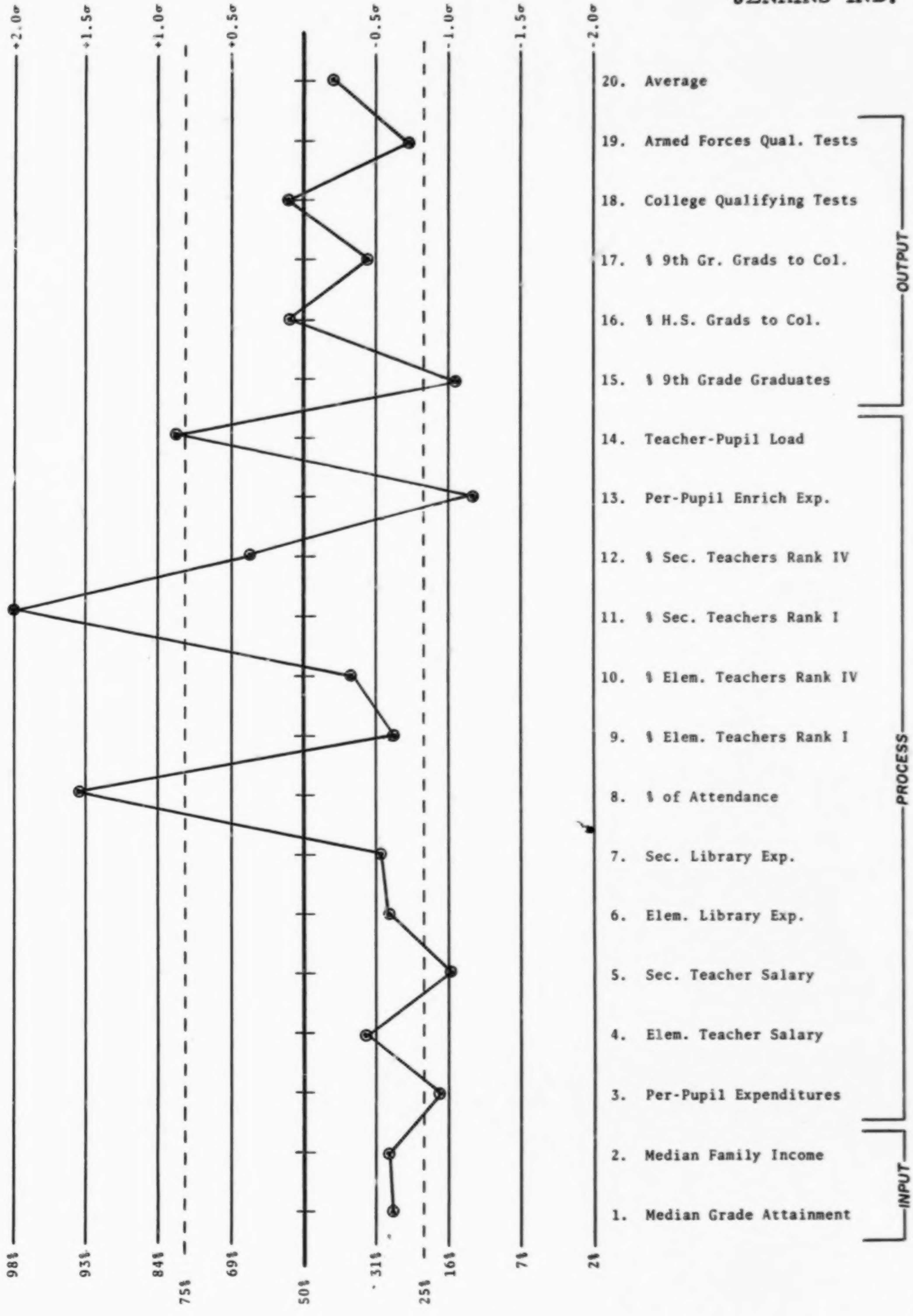
JENKINS IND.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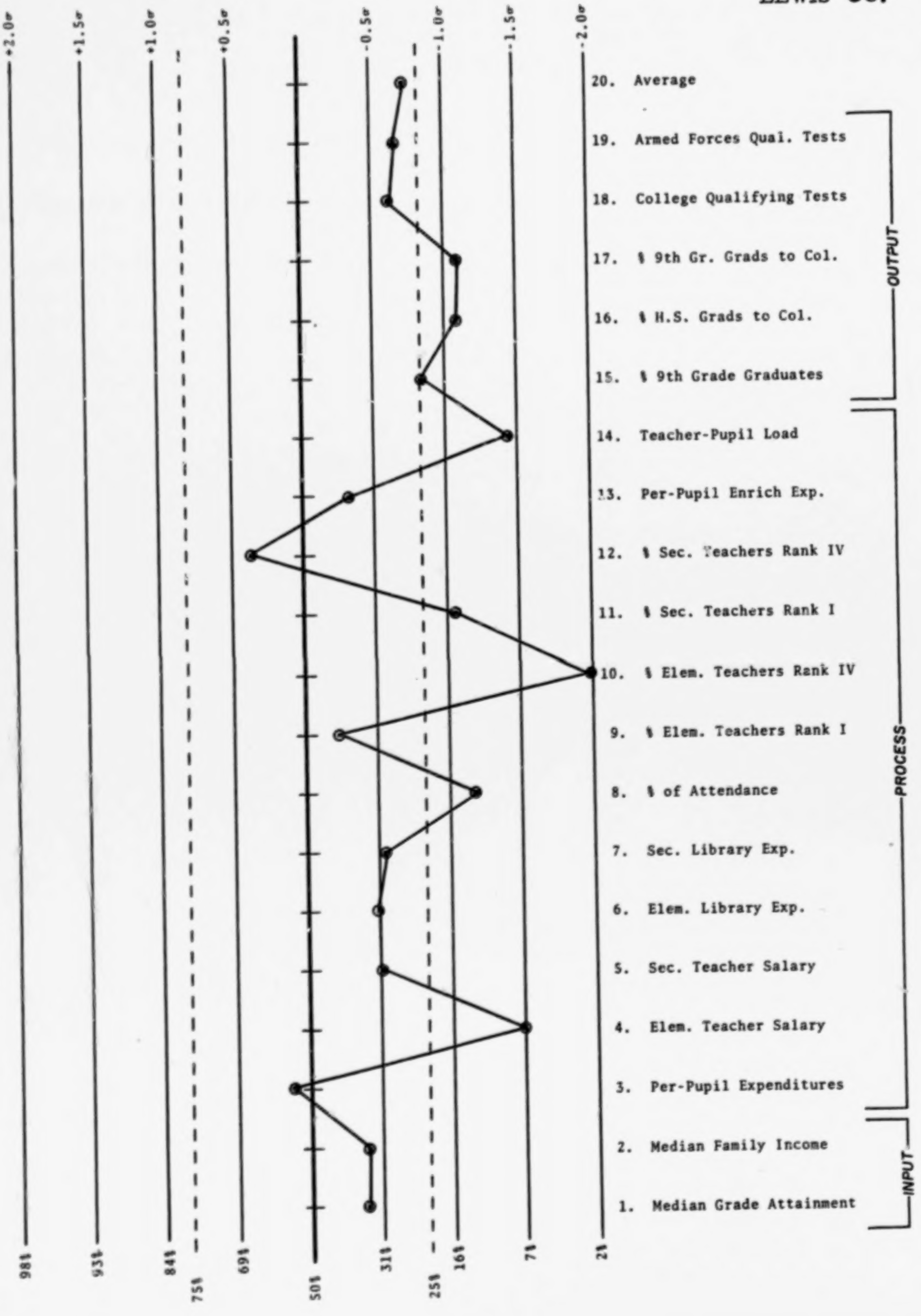
LEWIS CO.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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
OUTPUT
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98%
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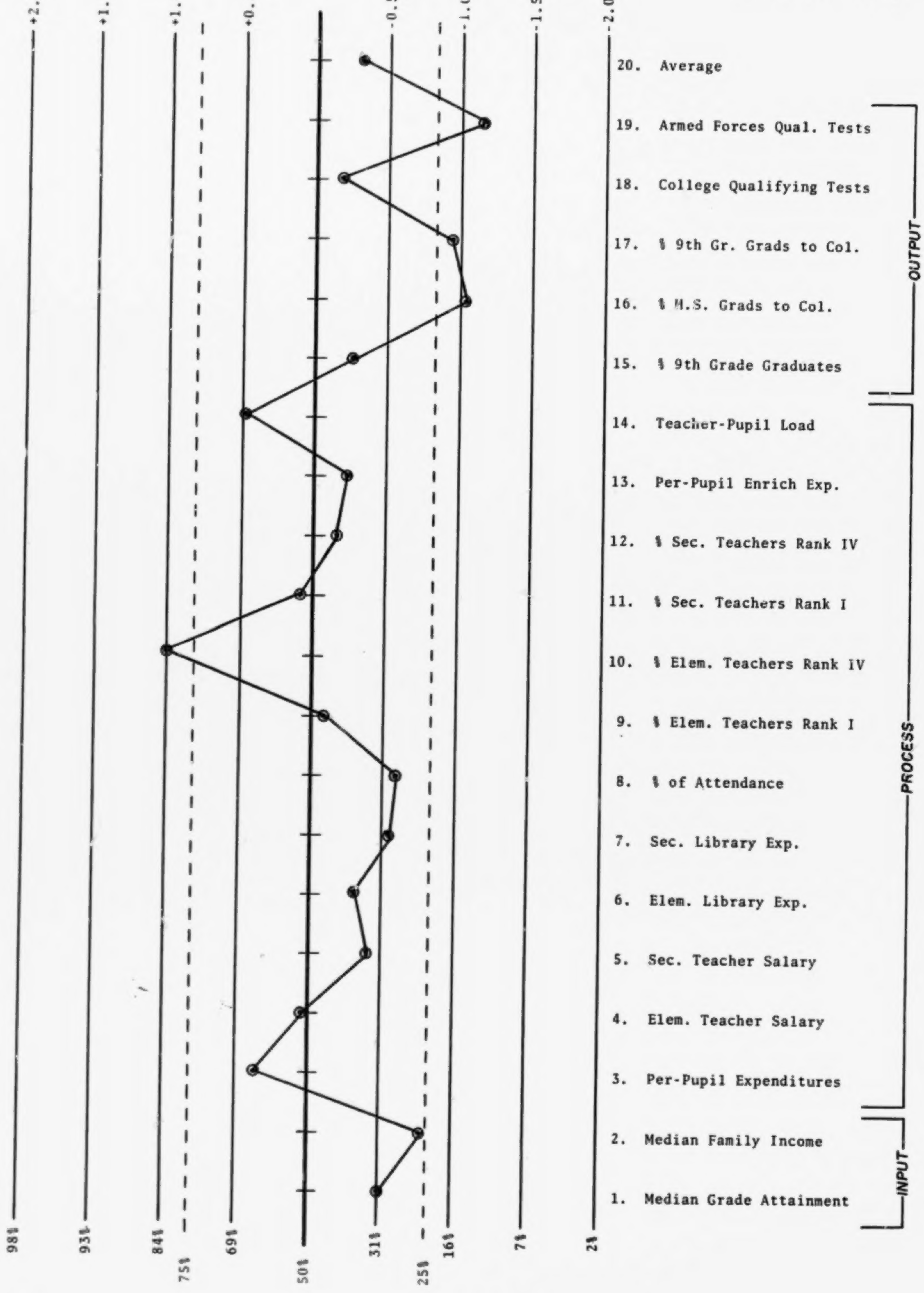
LINCOLN CO.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15. % 9th Grade Graduates
14. Teacher-Pupil Load
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8. % of Attendance
7. Sec. Library Exp.
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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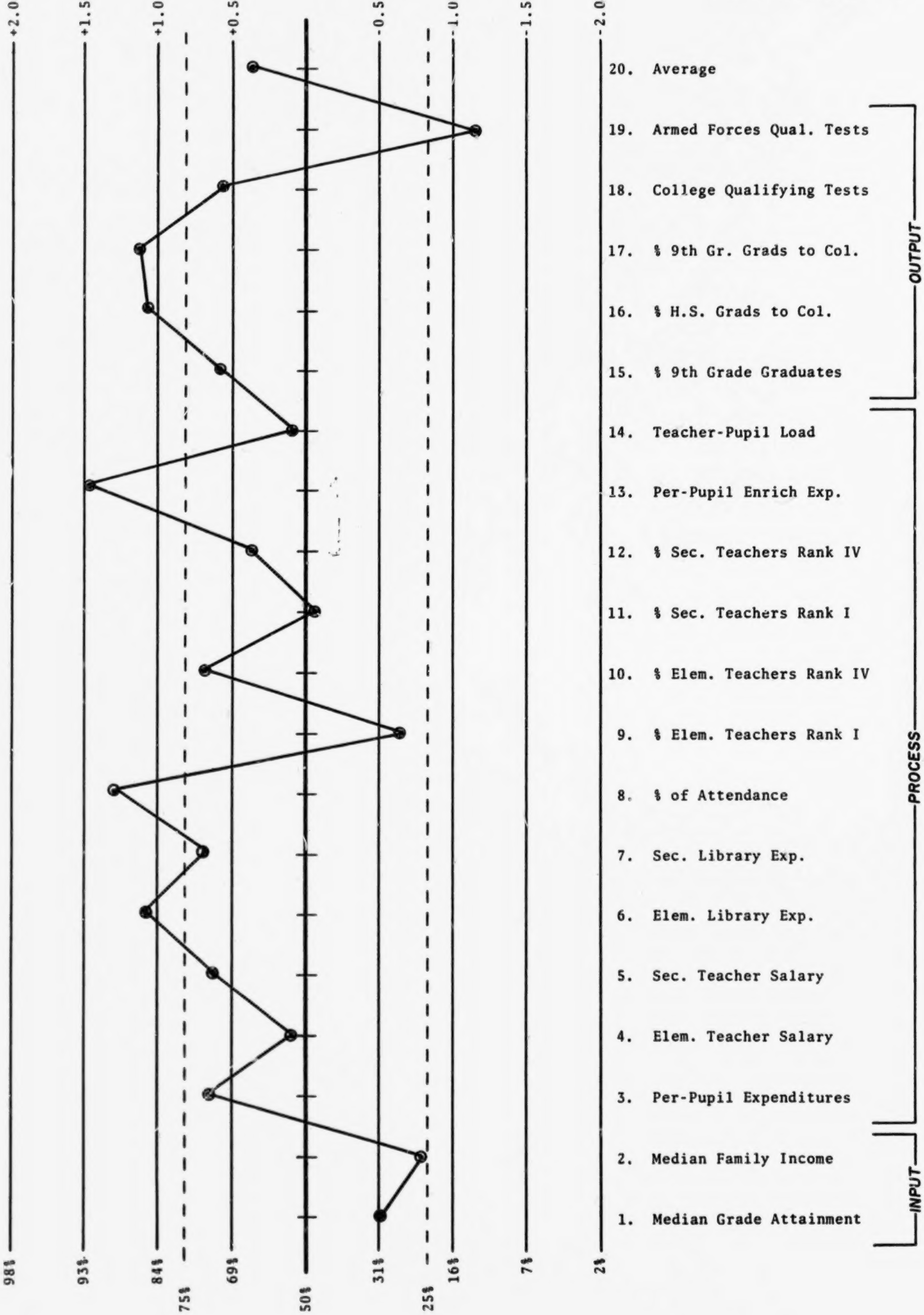
STANFORD IND.



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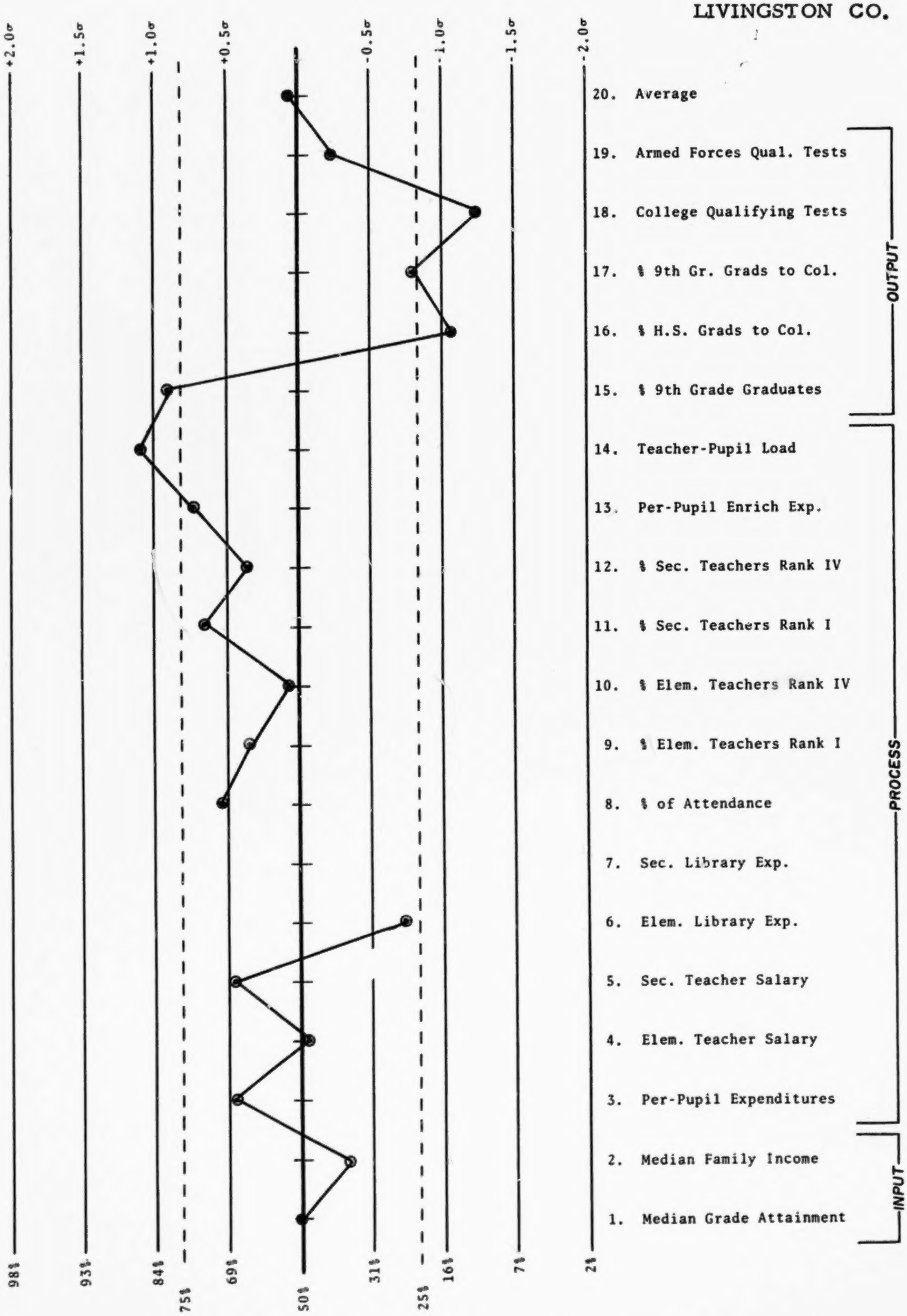

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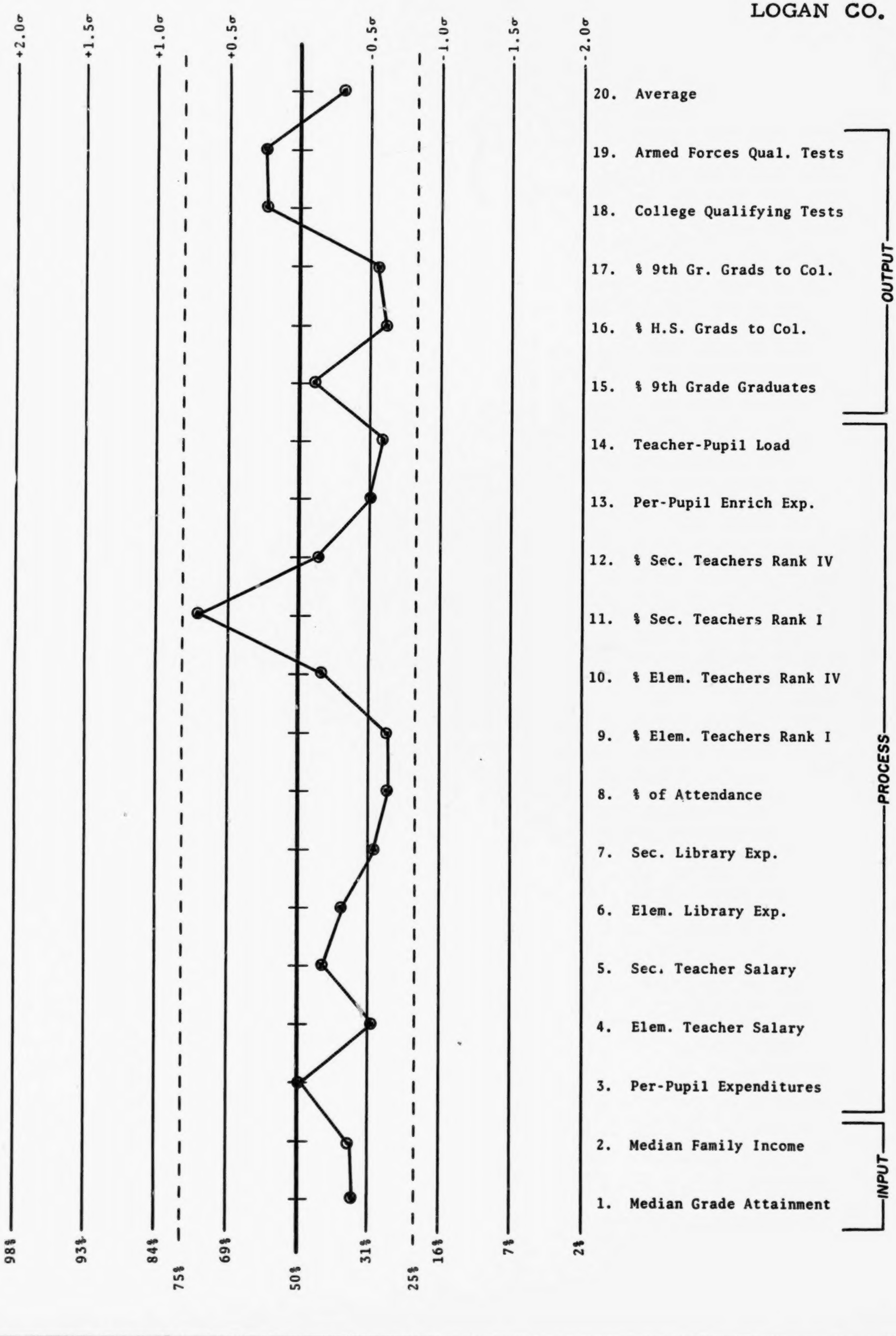
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18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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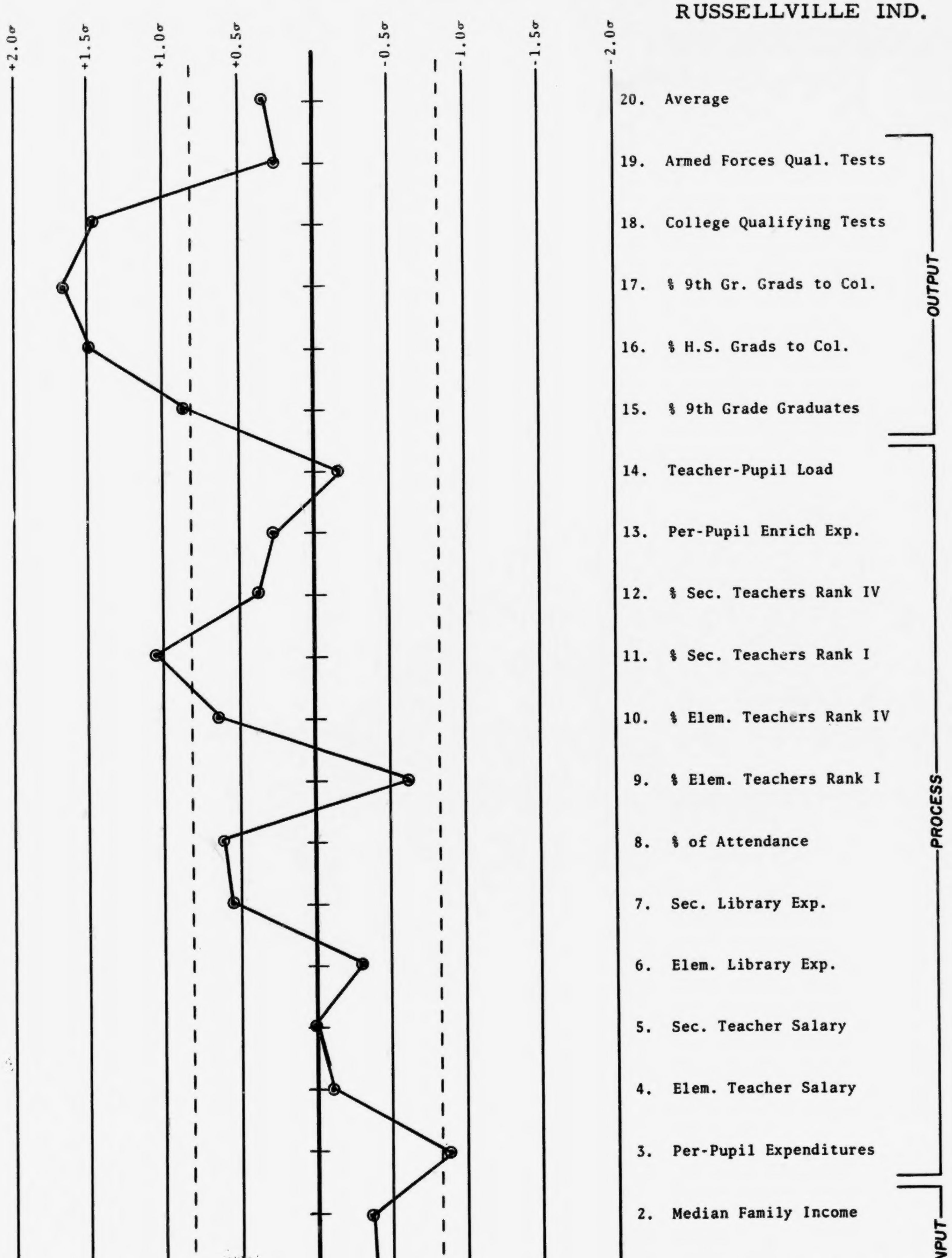
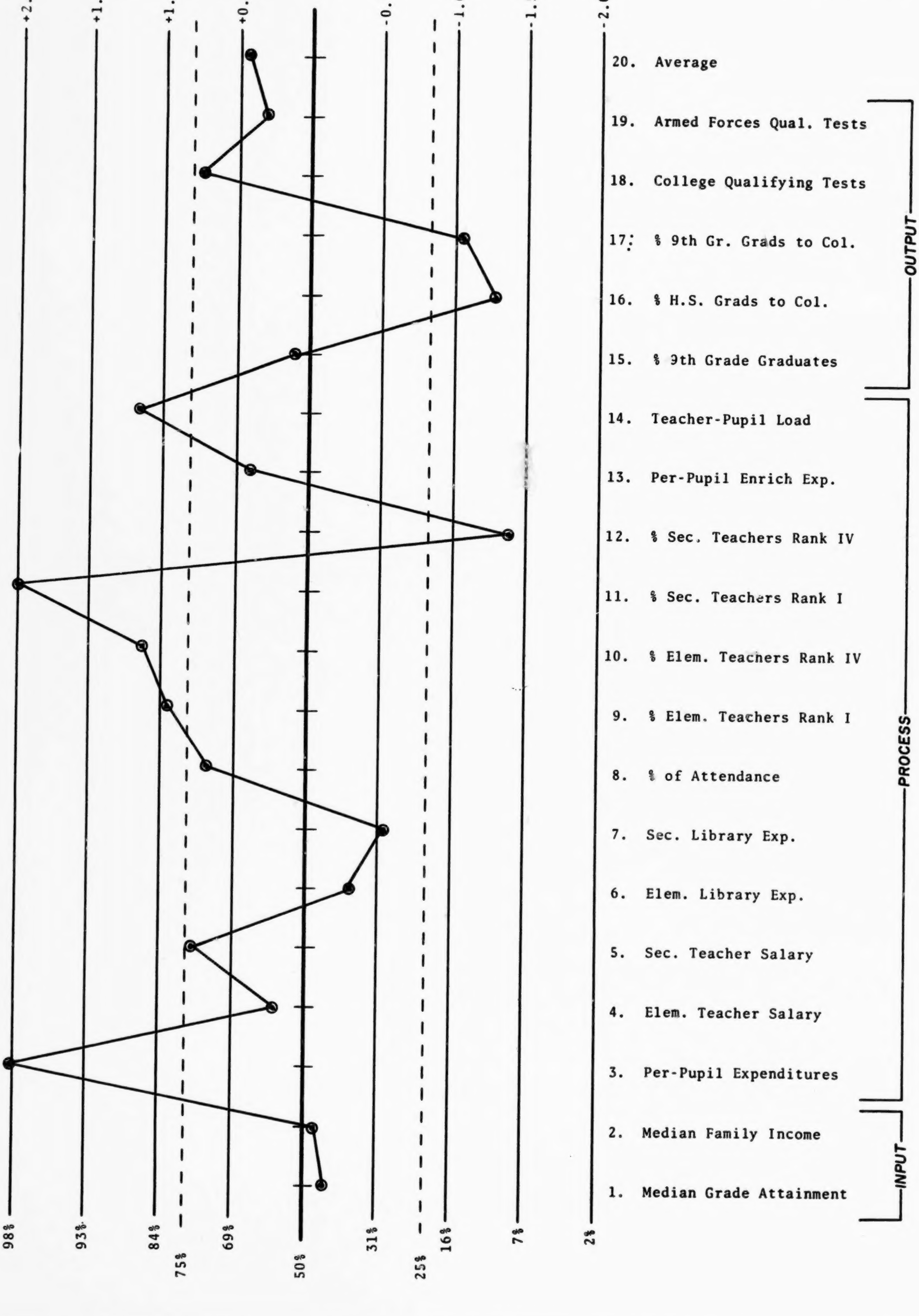
RUSSELLVILLE IND.





LYON CO.

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15. % 9th Grade Graduates
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8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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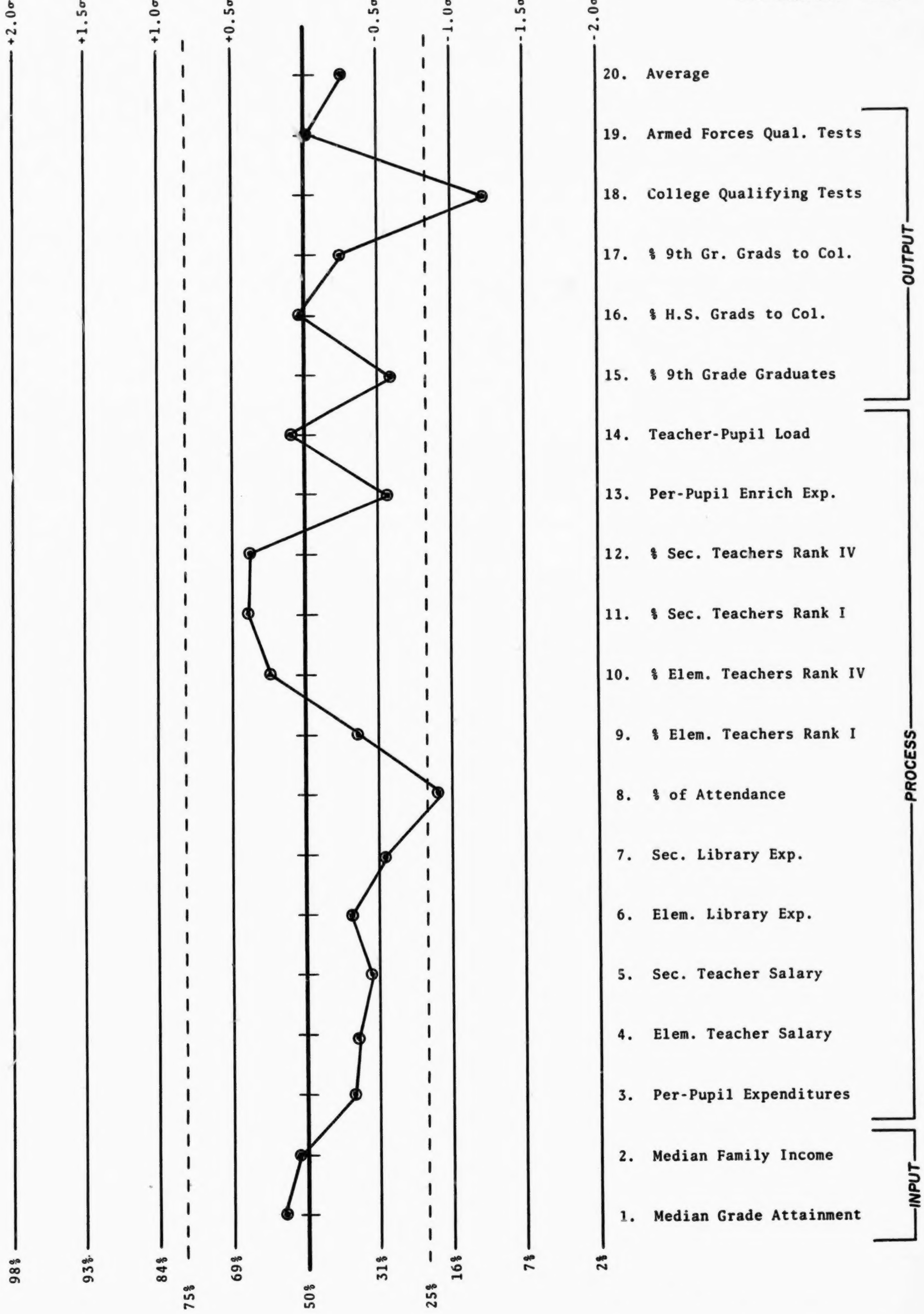
MADISON CO.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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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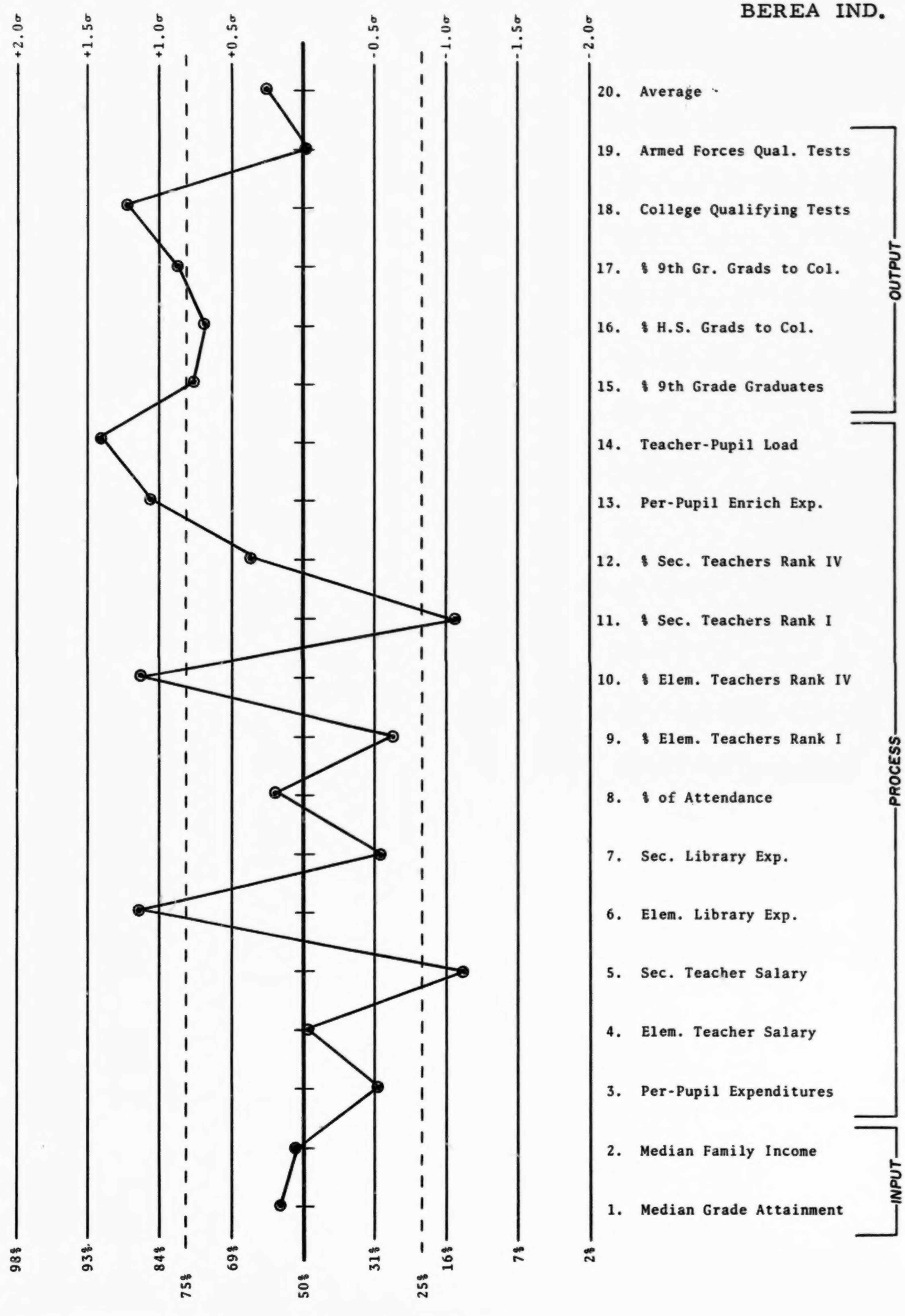
BEREA IND.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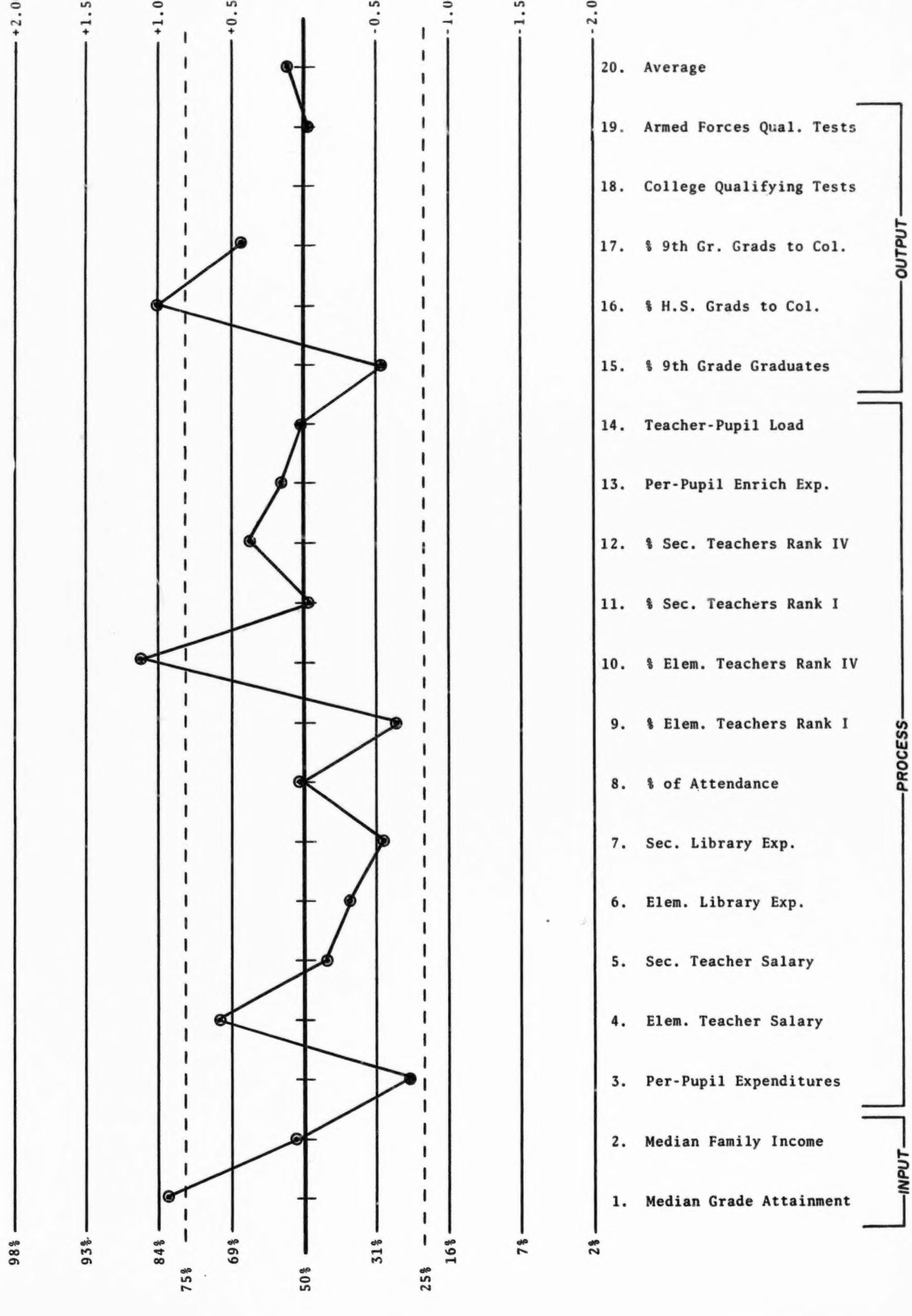
RICHMOND IND.



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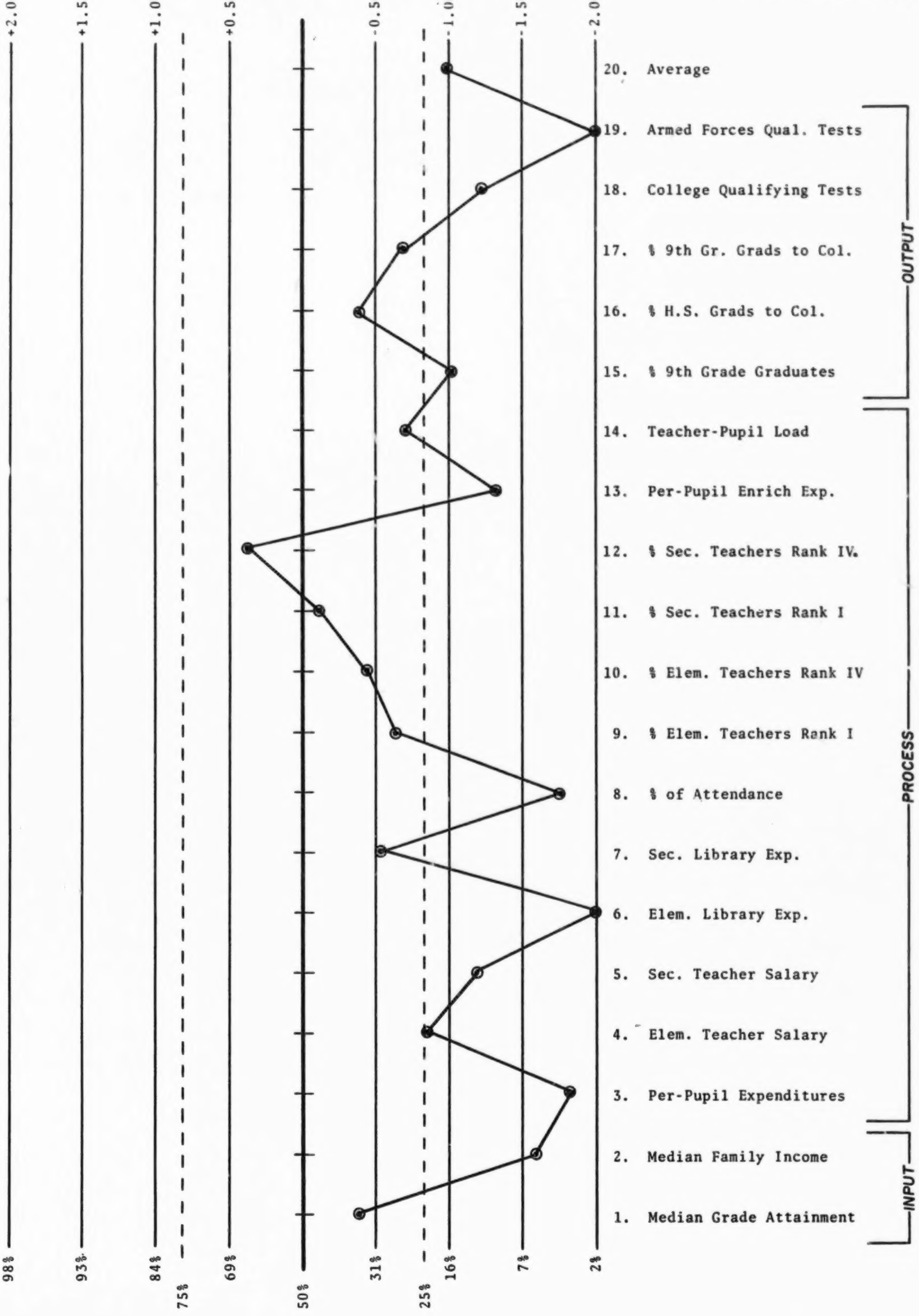
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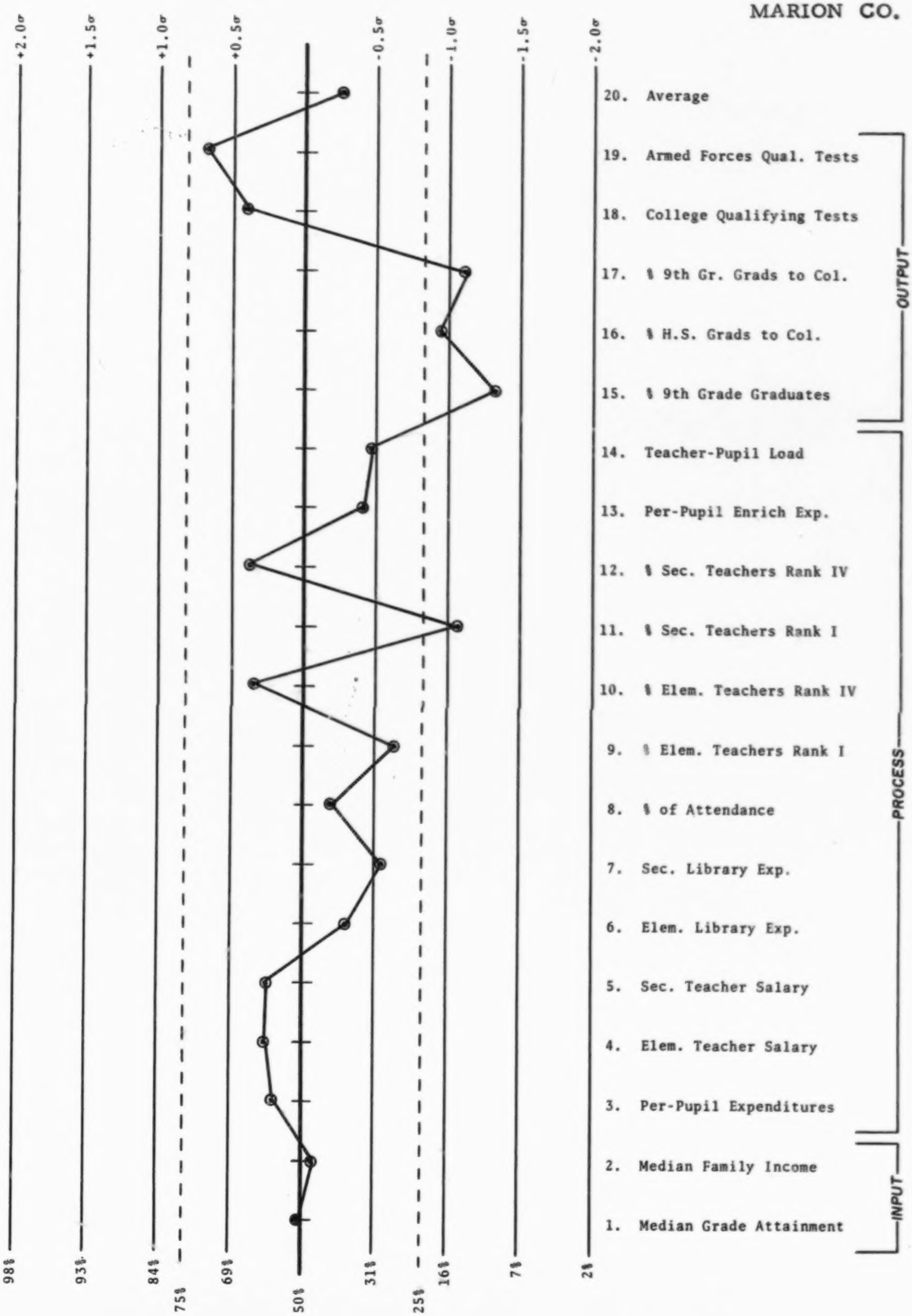
MARION CO.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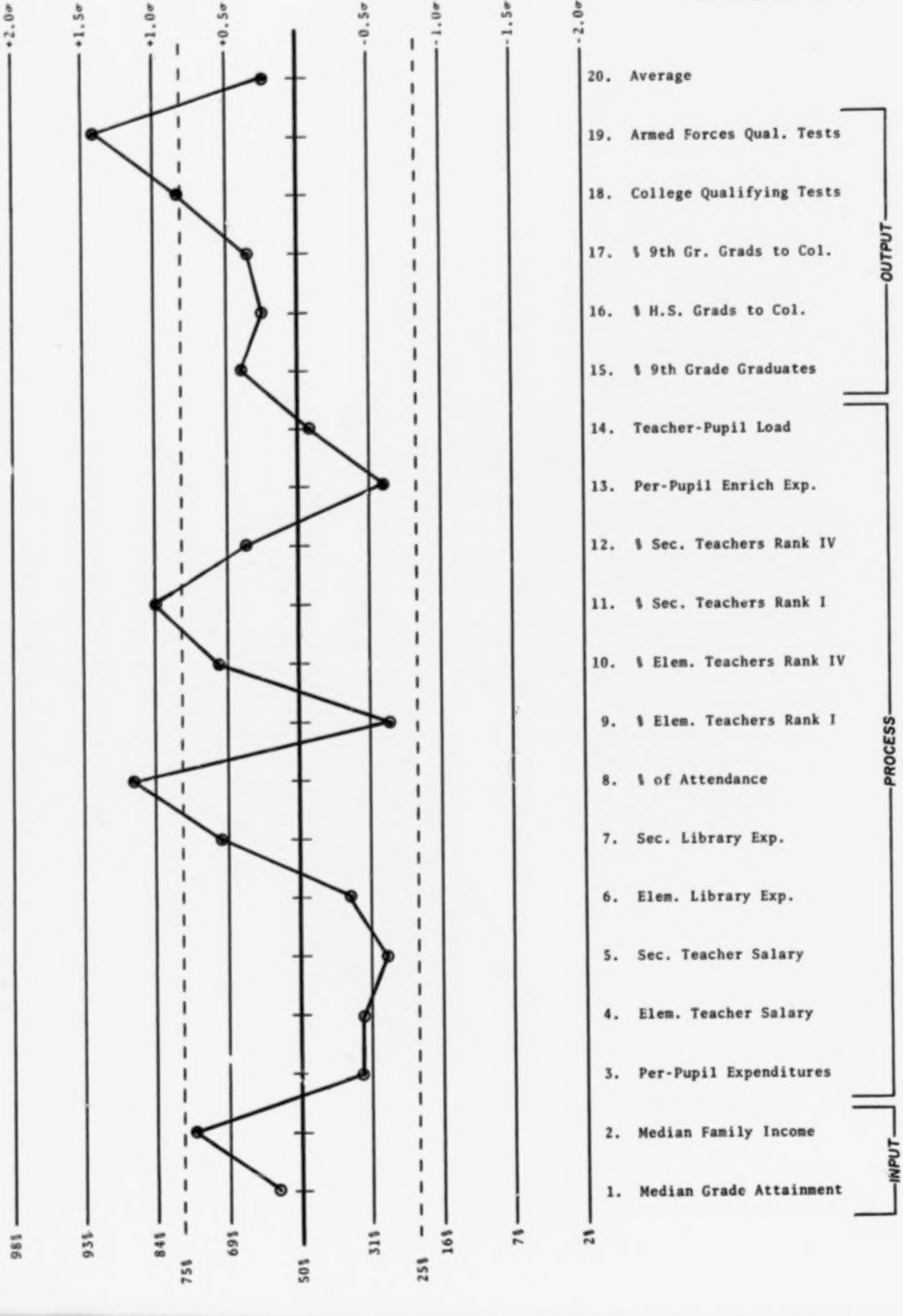
MARSHALL CO.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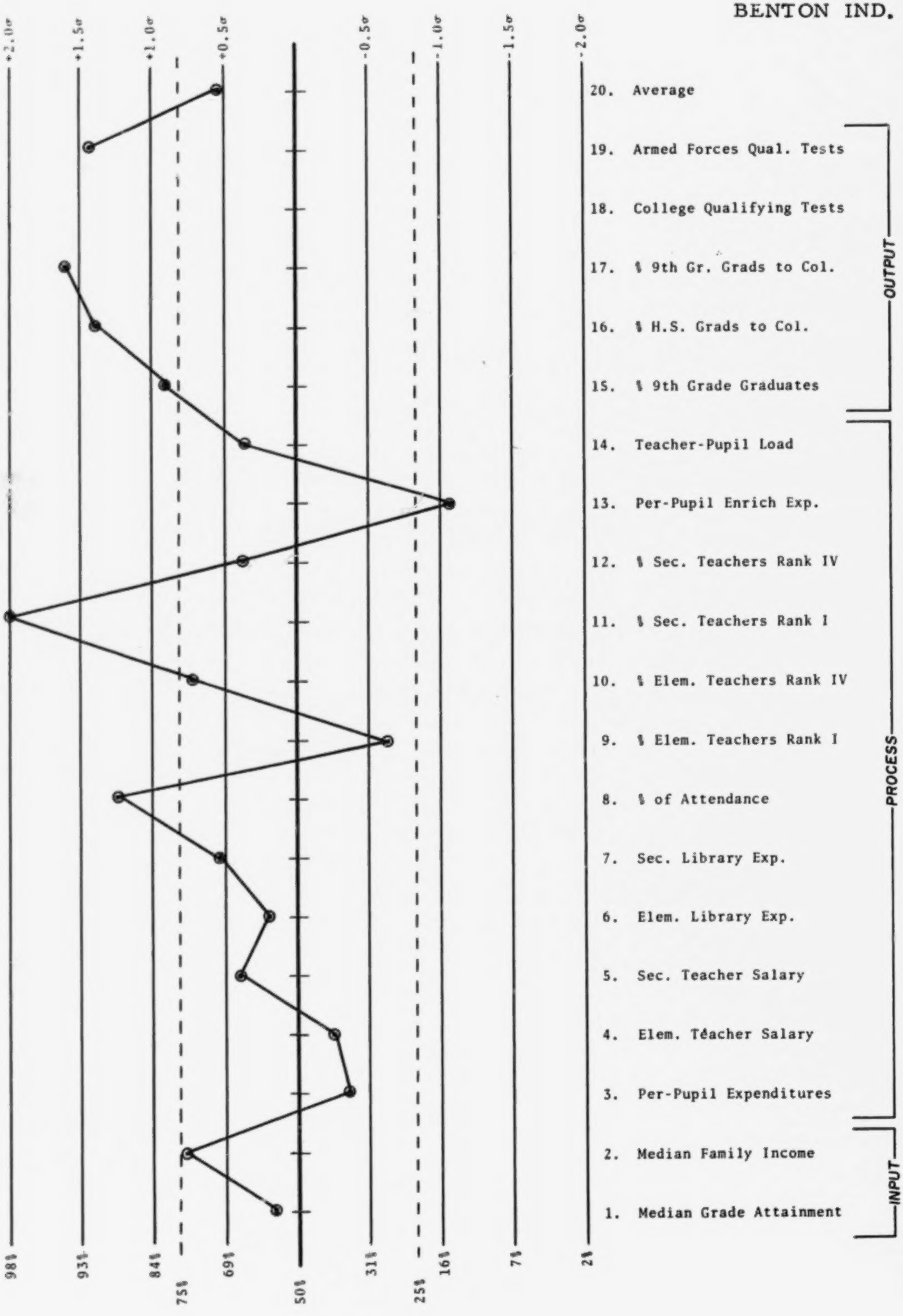
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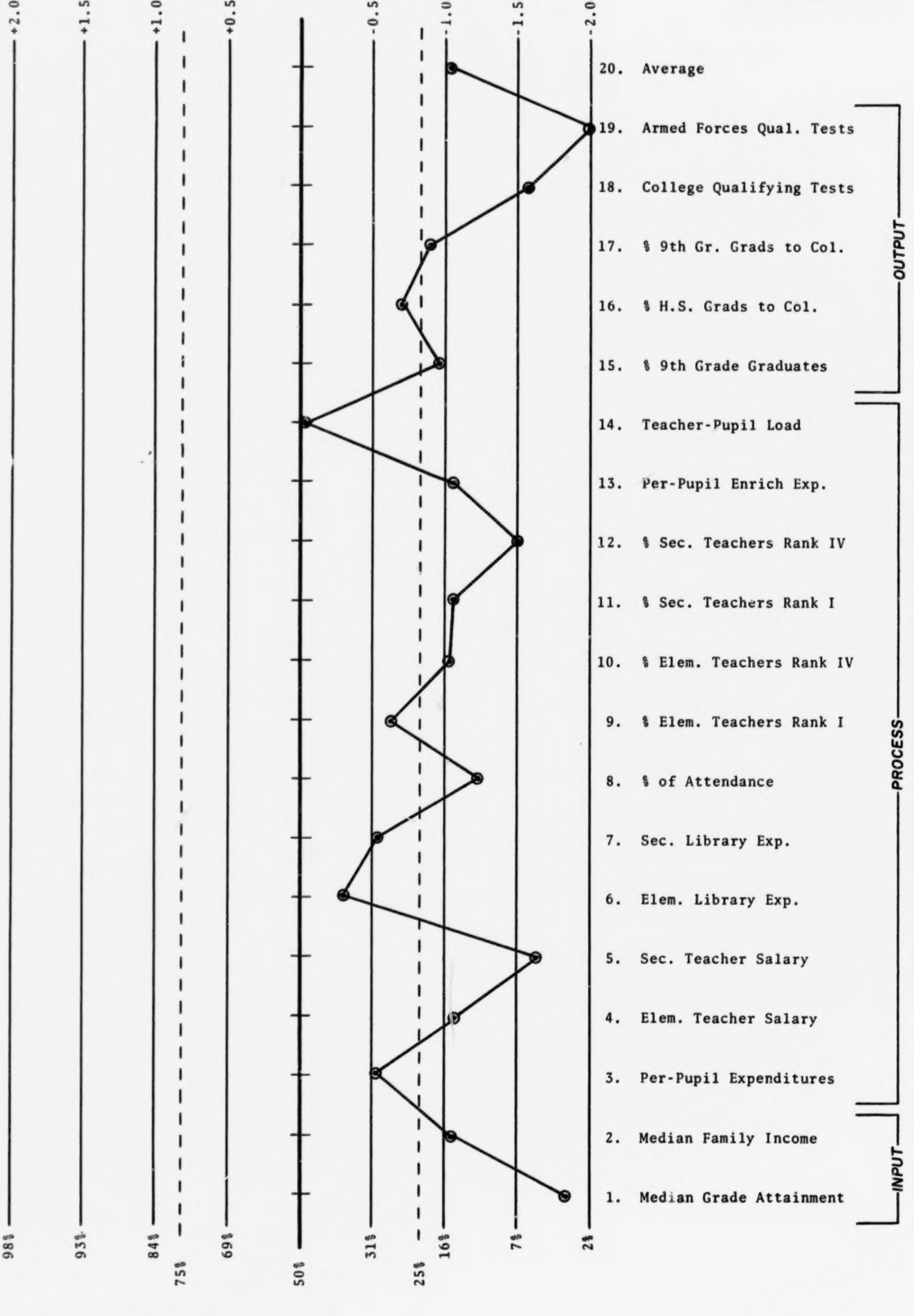
MARTIN CO.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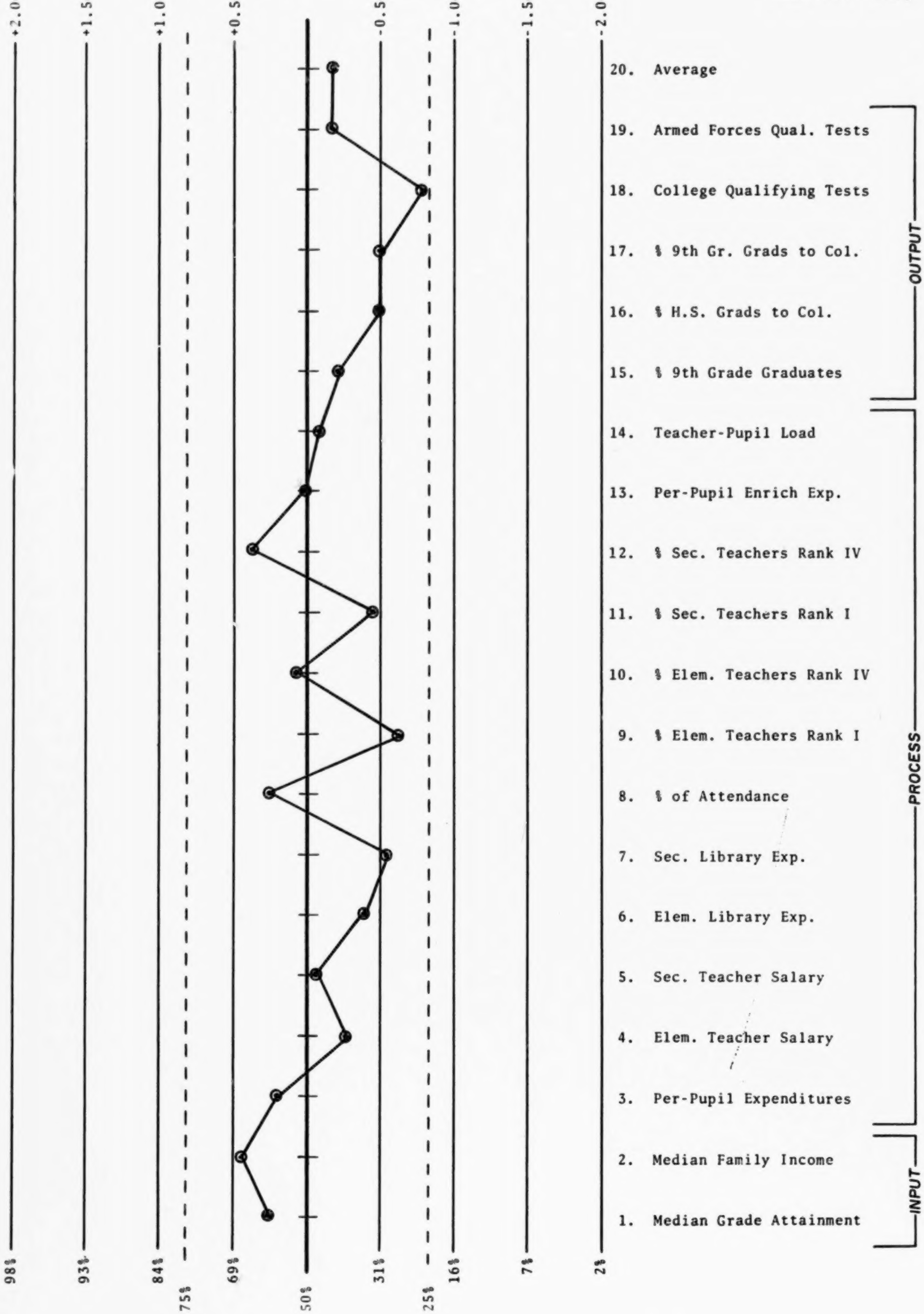
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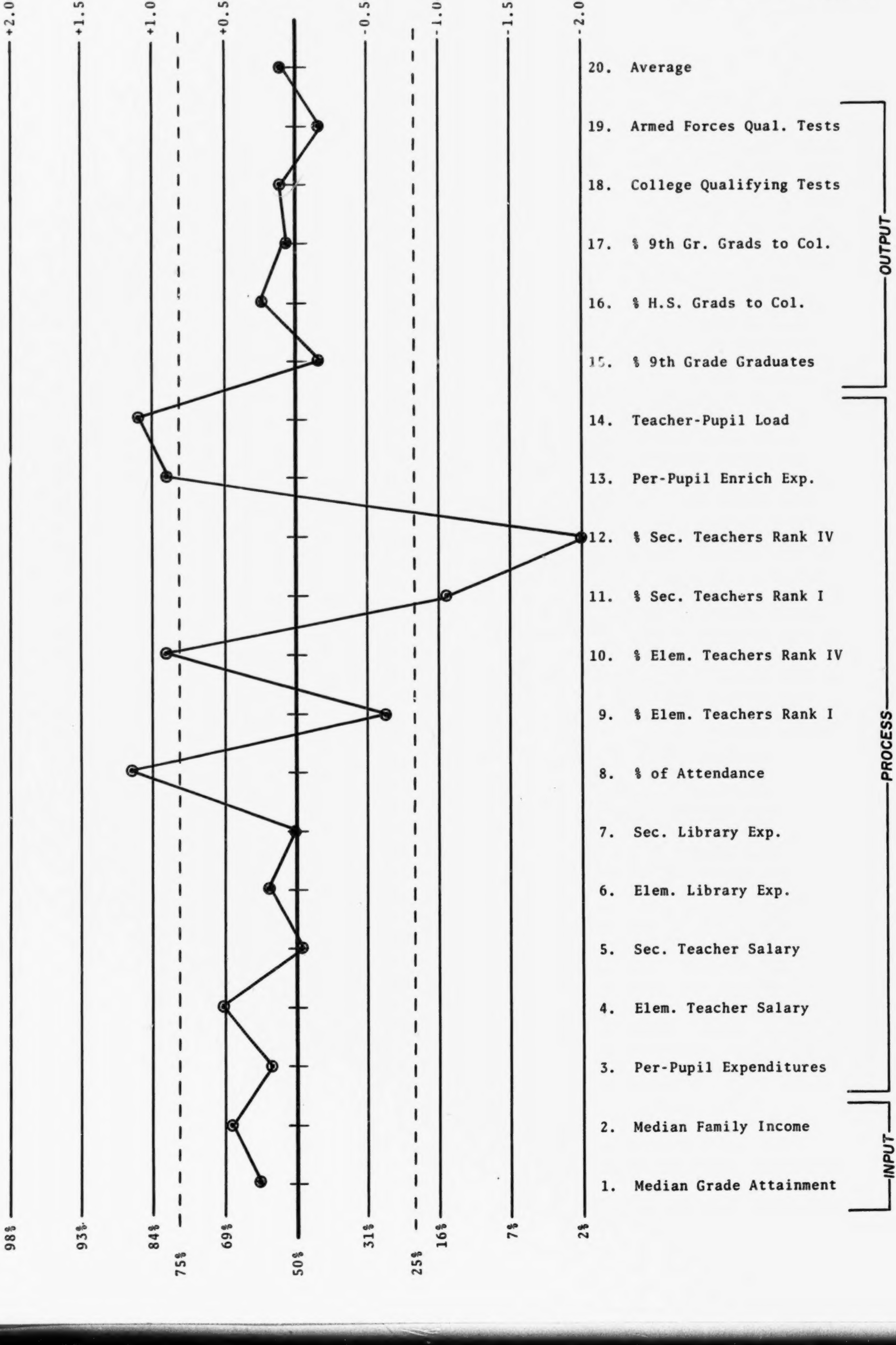
MAYSVILLE IND.



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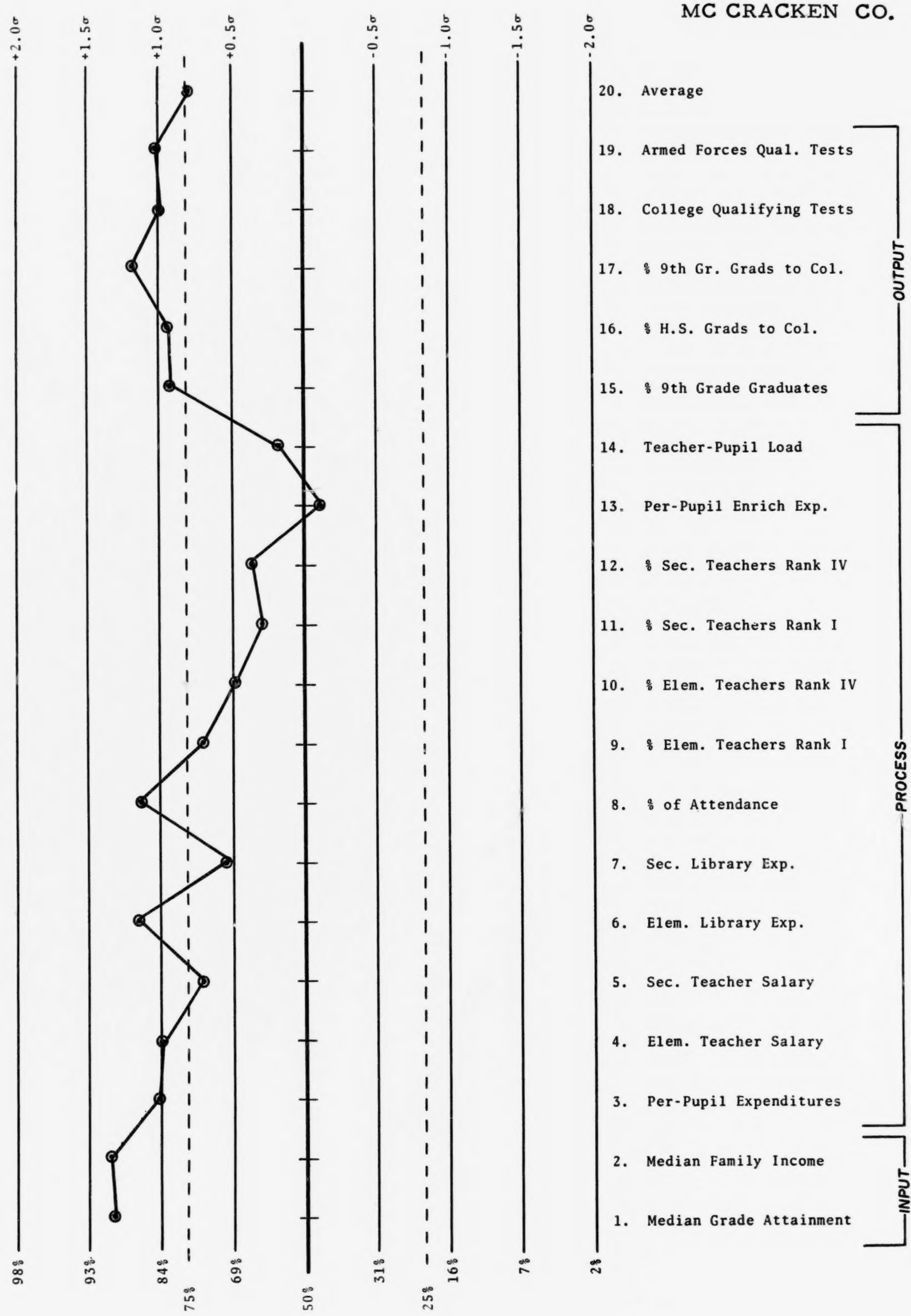

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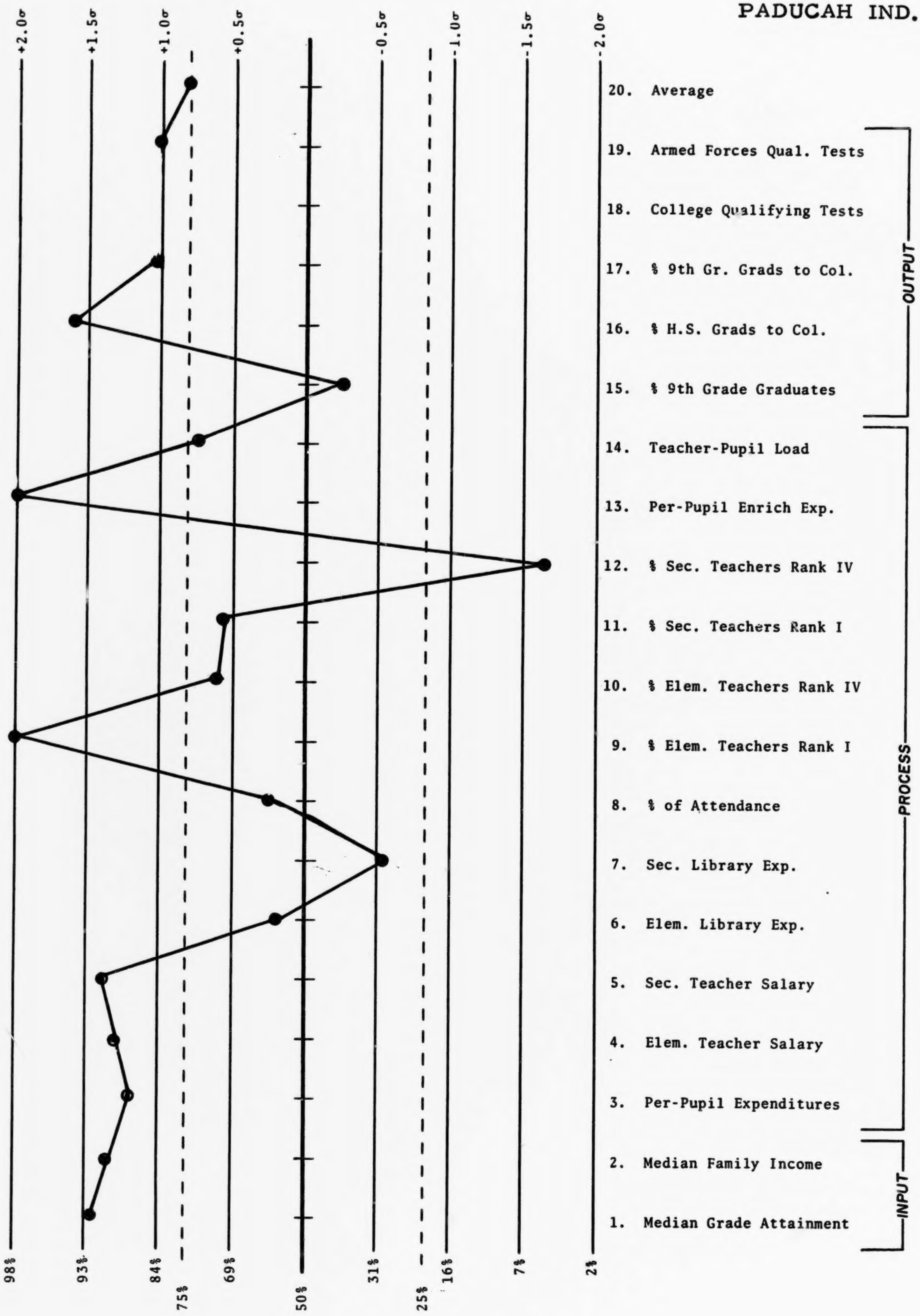
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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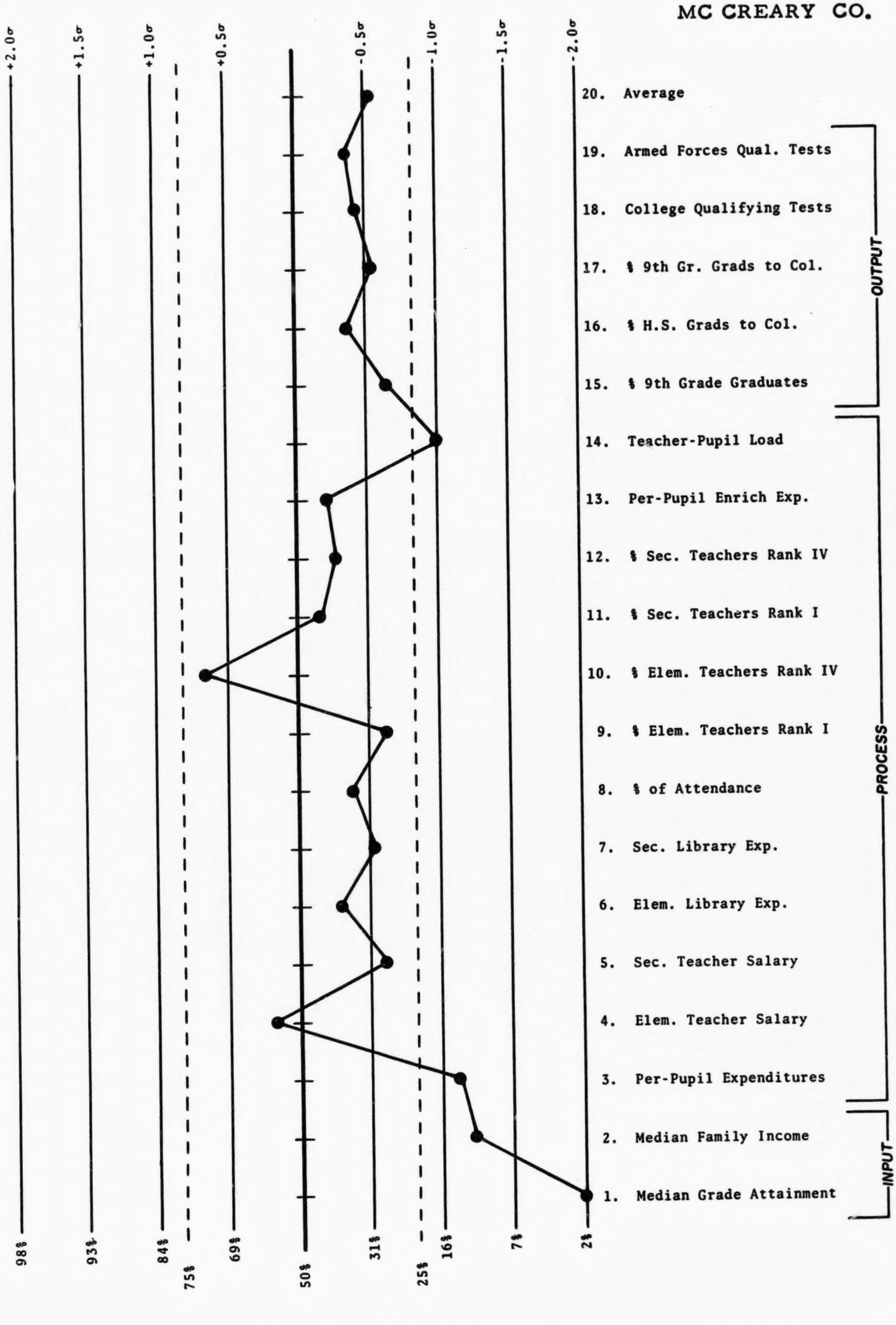
MC CREARY CO.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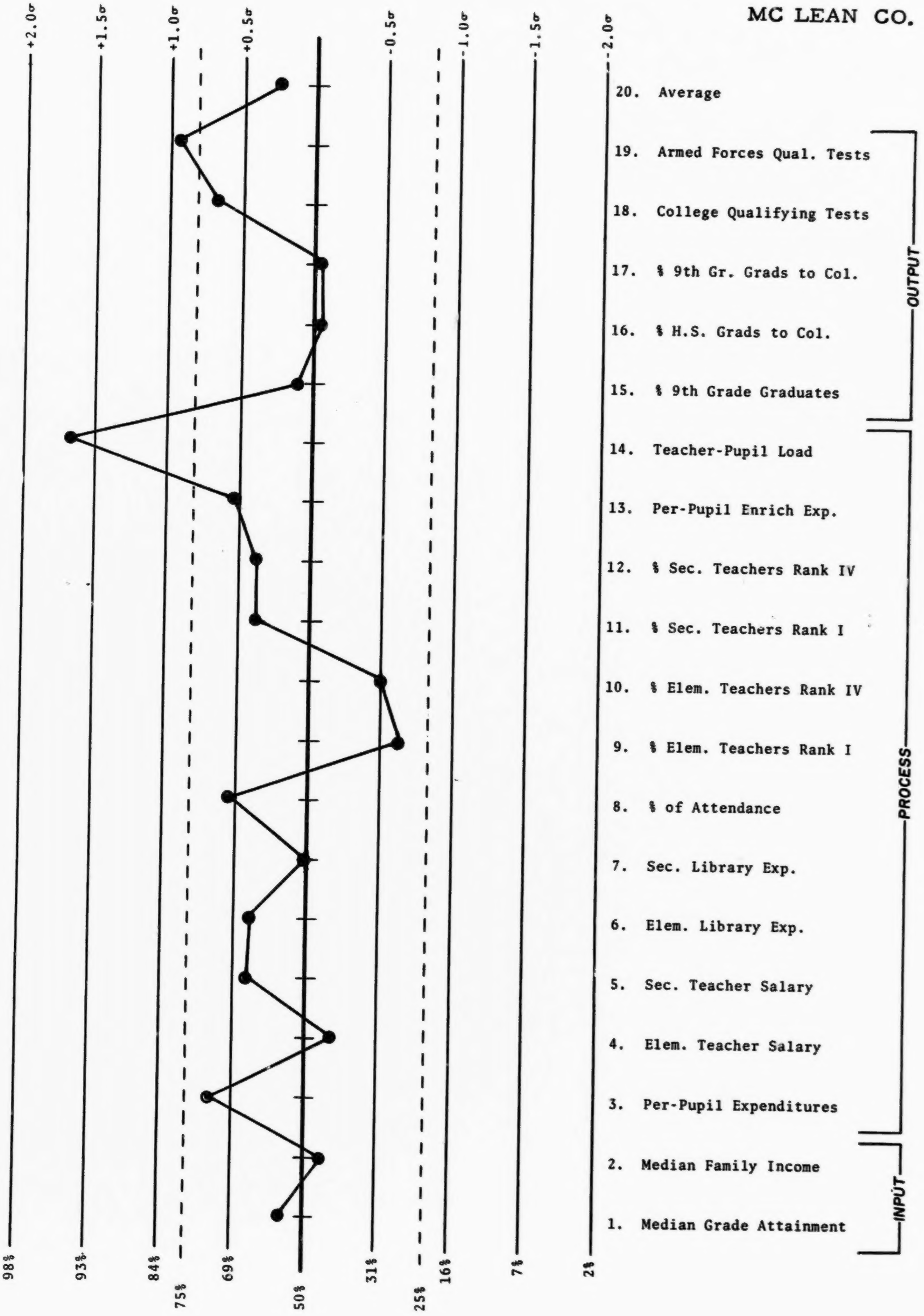
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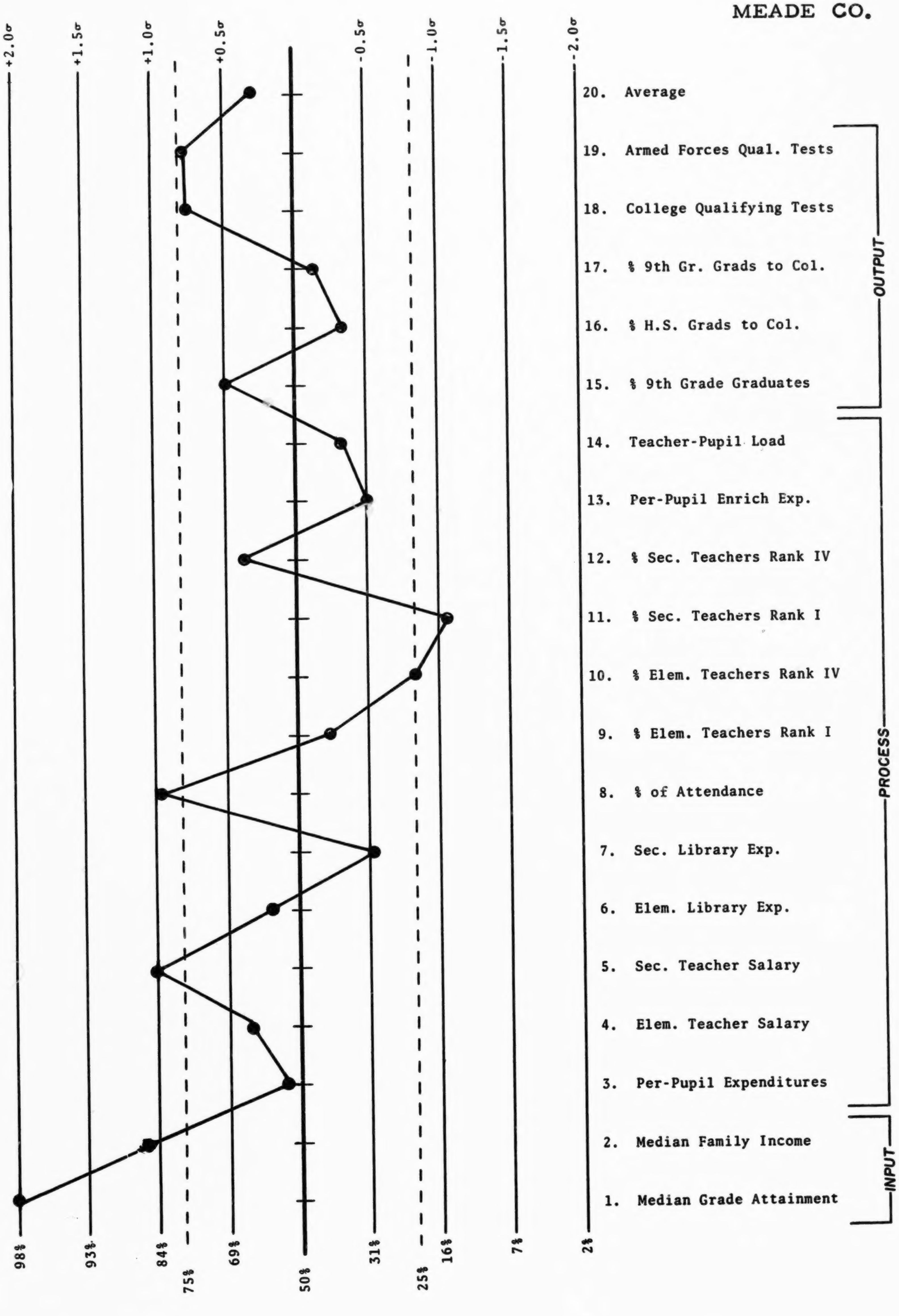
MEADE CO.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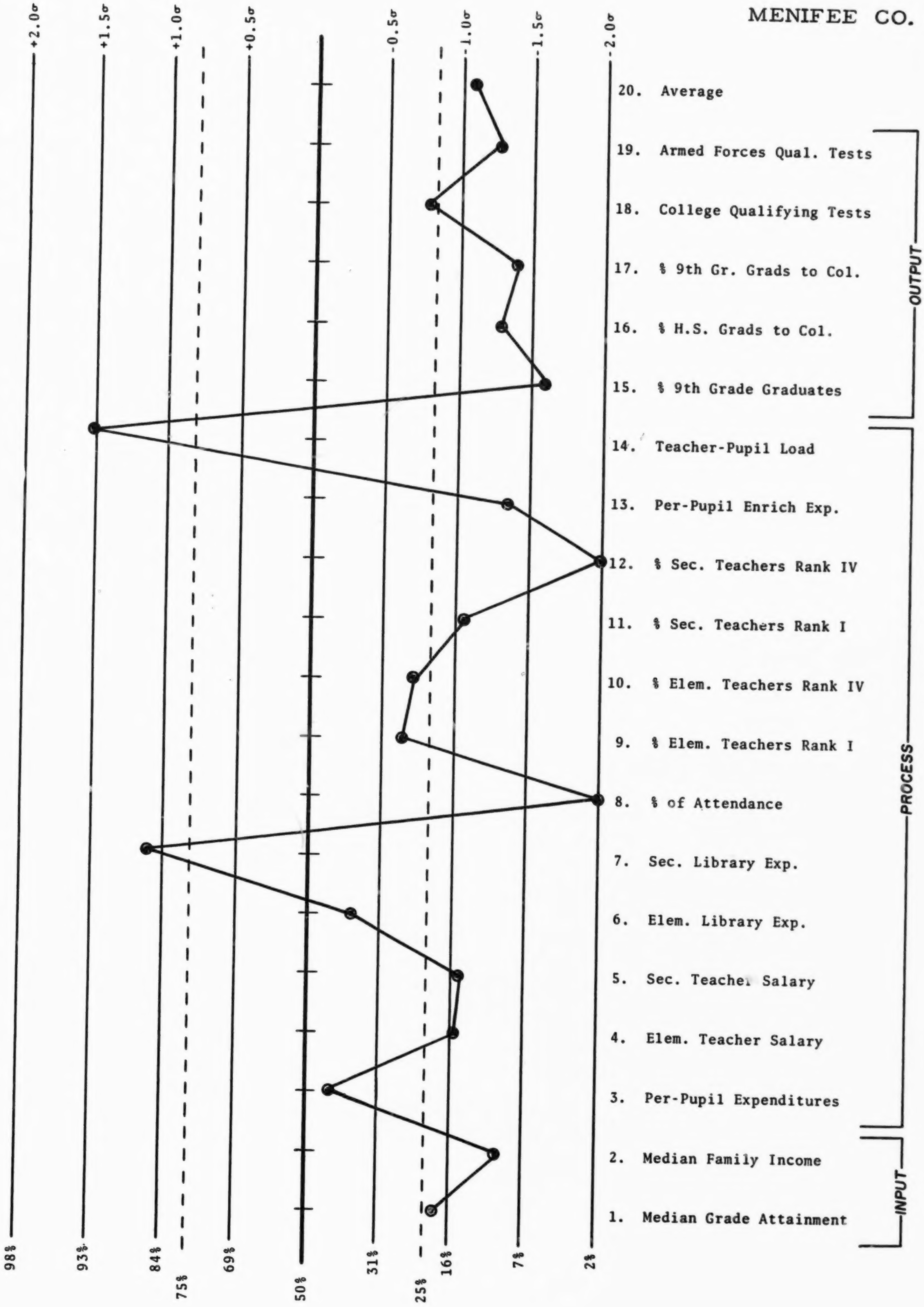
MENIFEE CO.



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3. Per-Pupil Expenditures
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1. Median Grade Attainment
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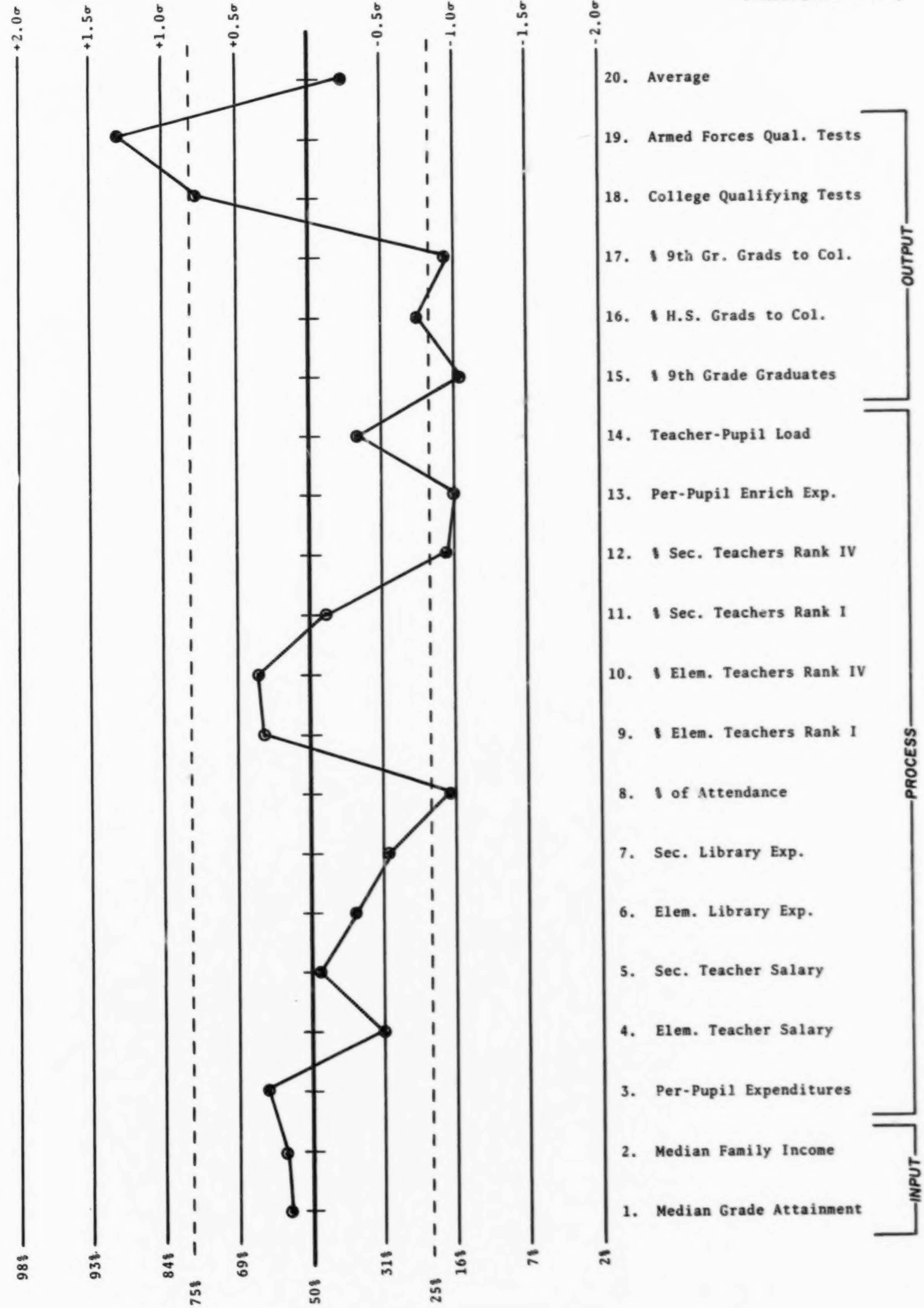
MERCER CO.



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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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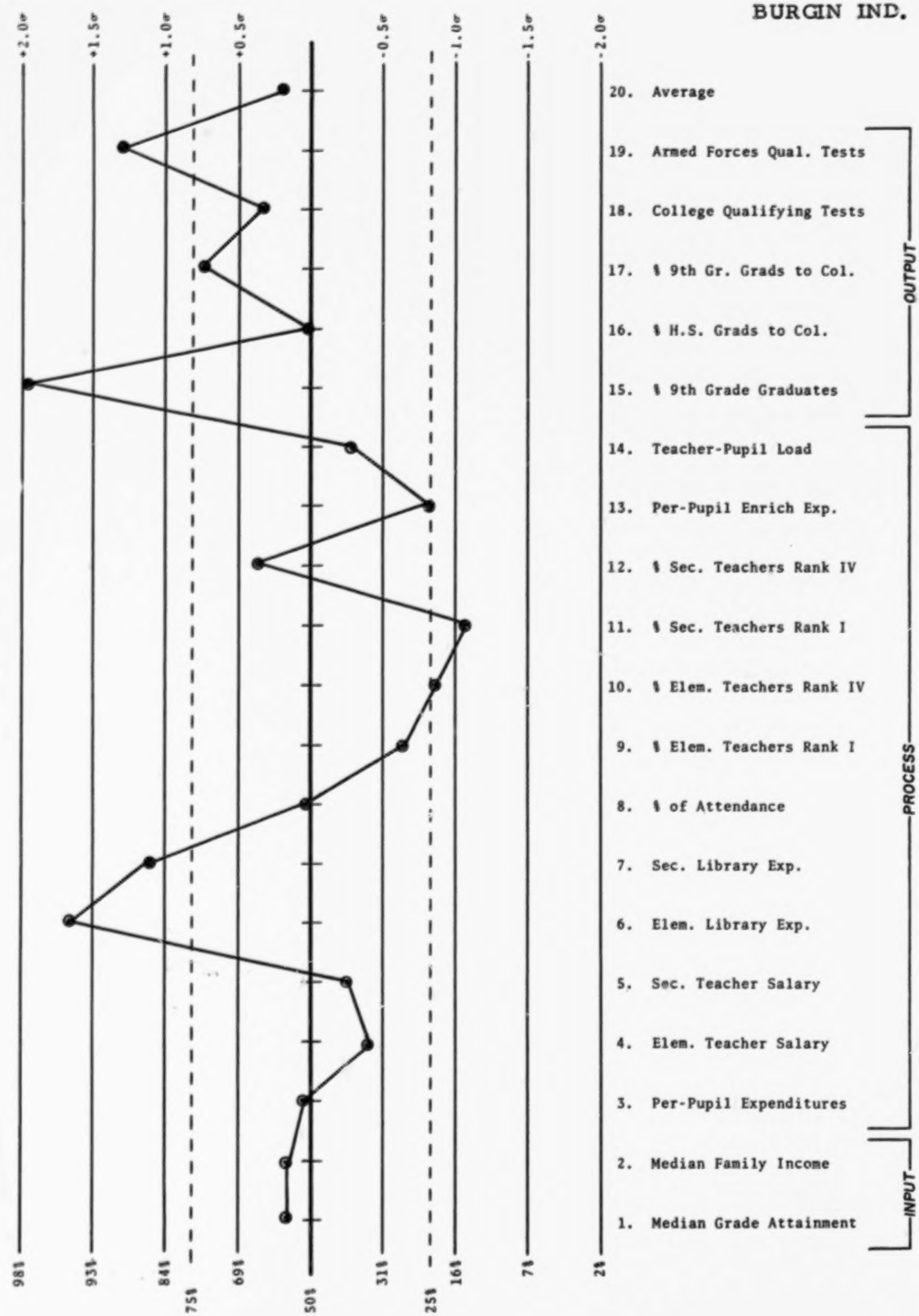
BURGIN IND.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20. Average
19. Armed Forces Qual. Tests
18. College Qualifying Tests
17. % 9th Gr. Grads to Col.
16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
OUTPUT
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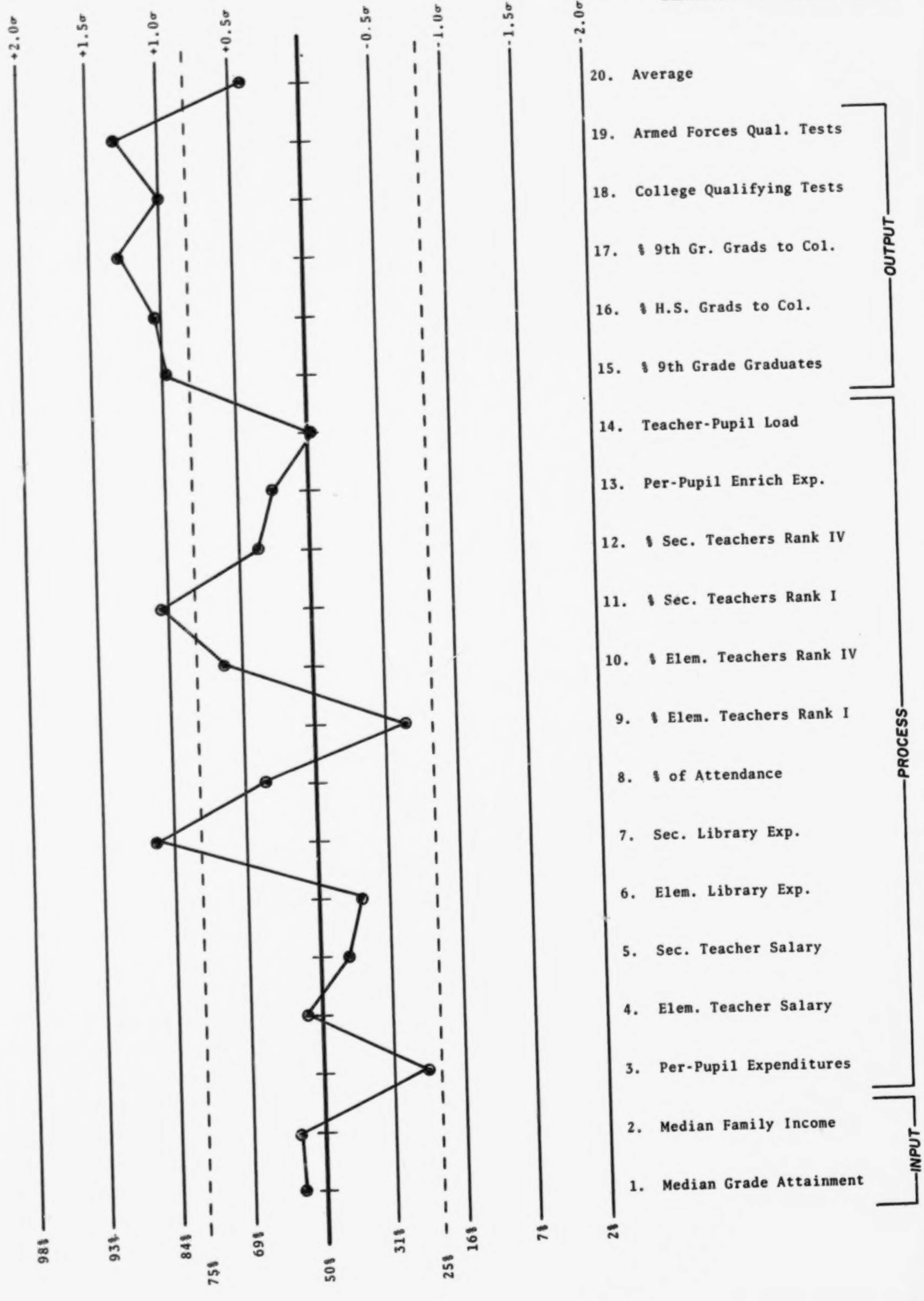
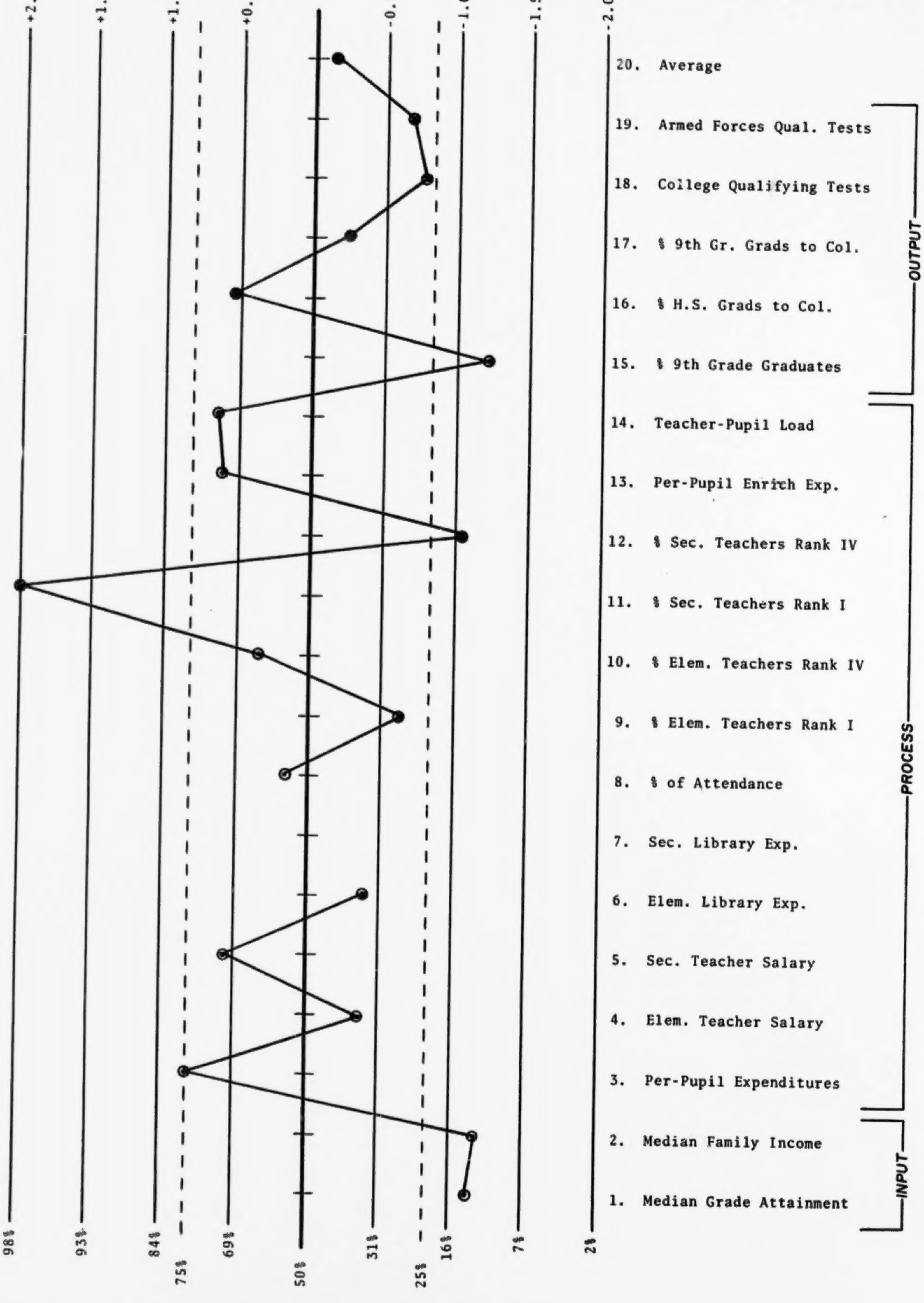
HARRODSBURG IND.



METCALFE CO.



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7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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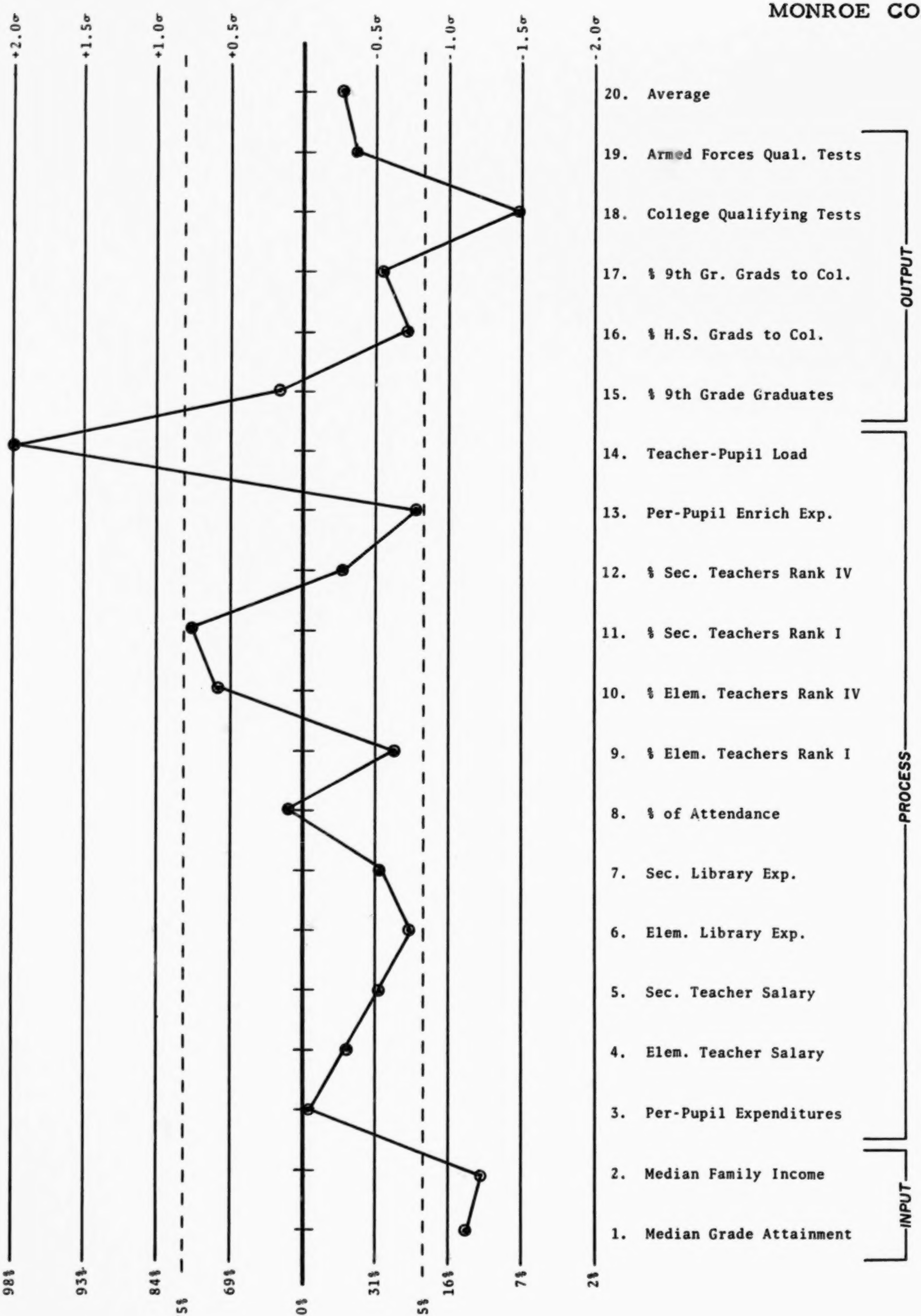
MONROE CO.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8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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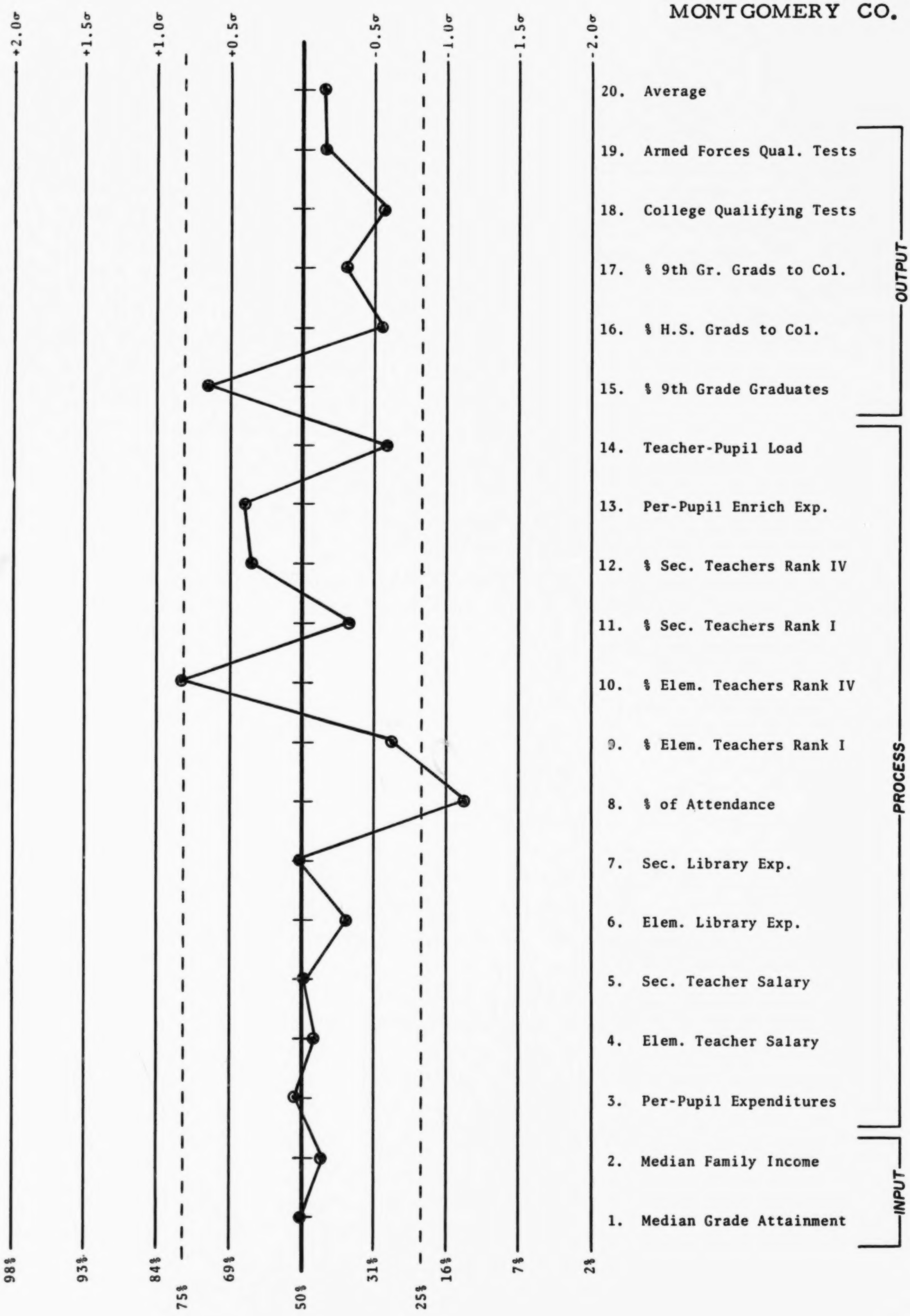
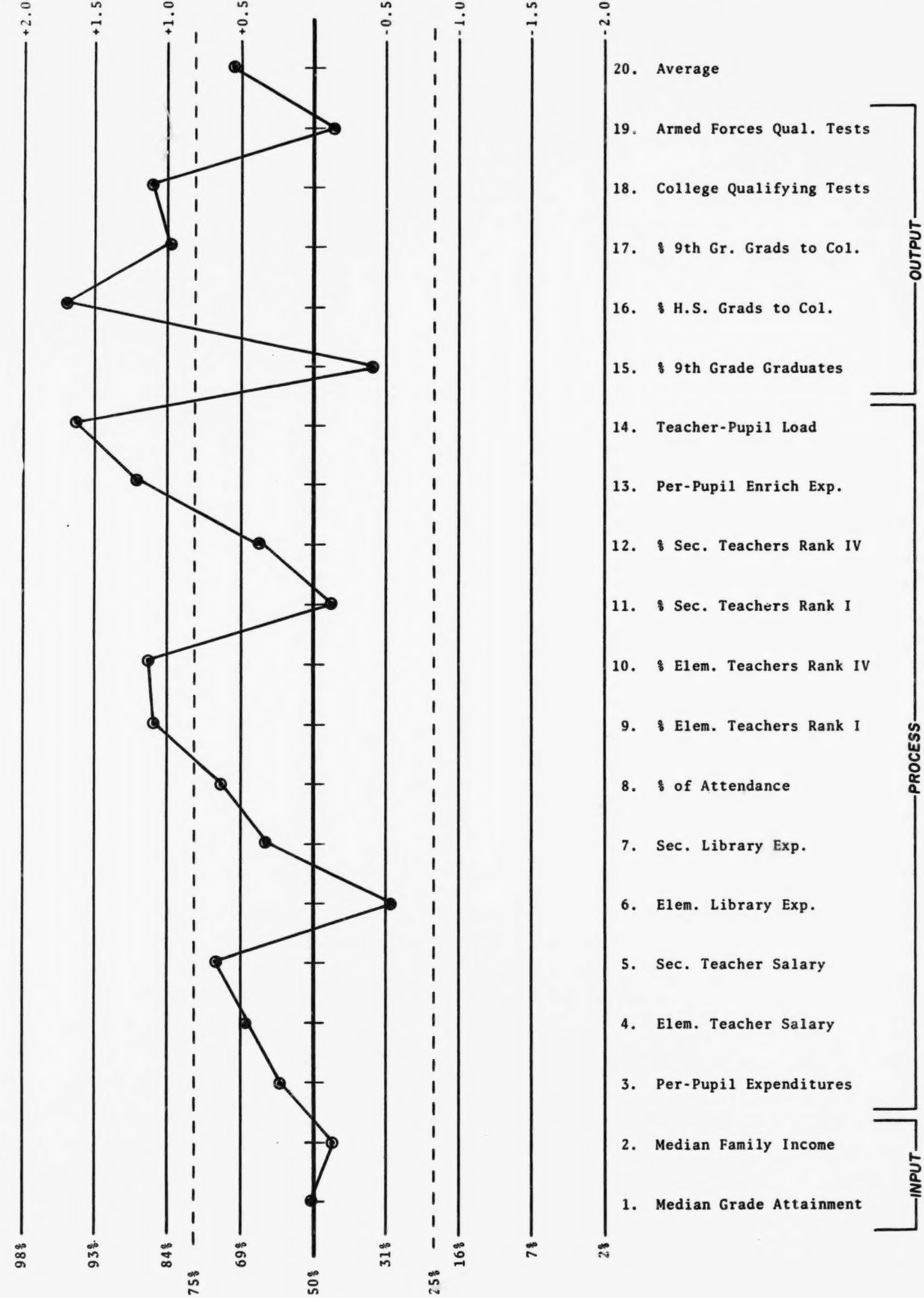
MONTGOMERY CO.



MT. STERLING IND.



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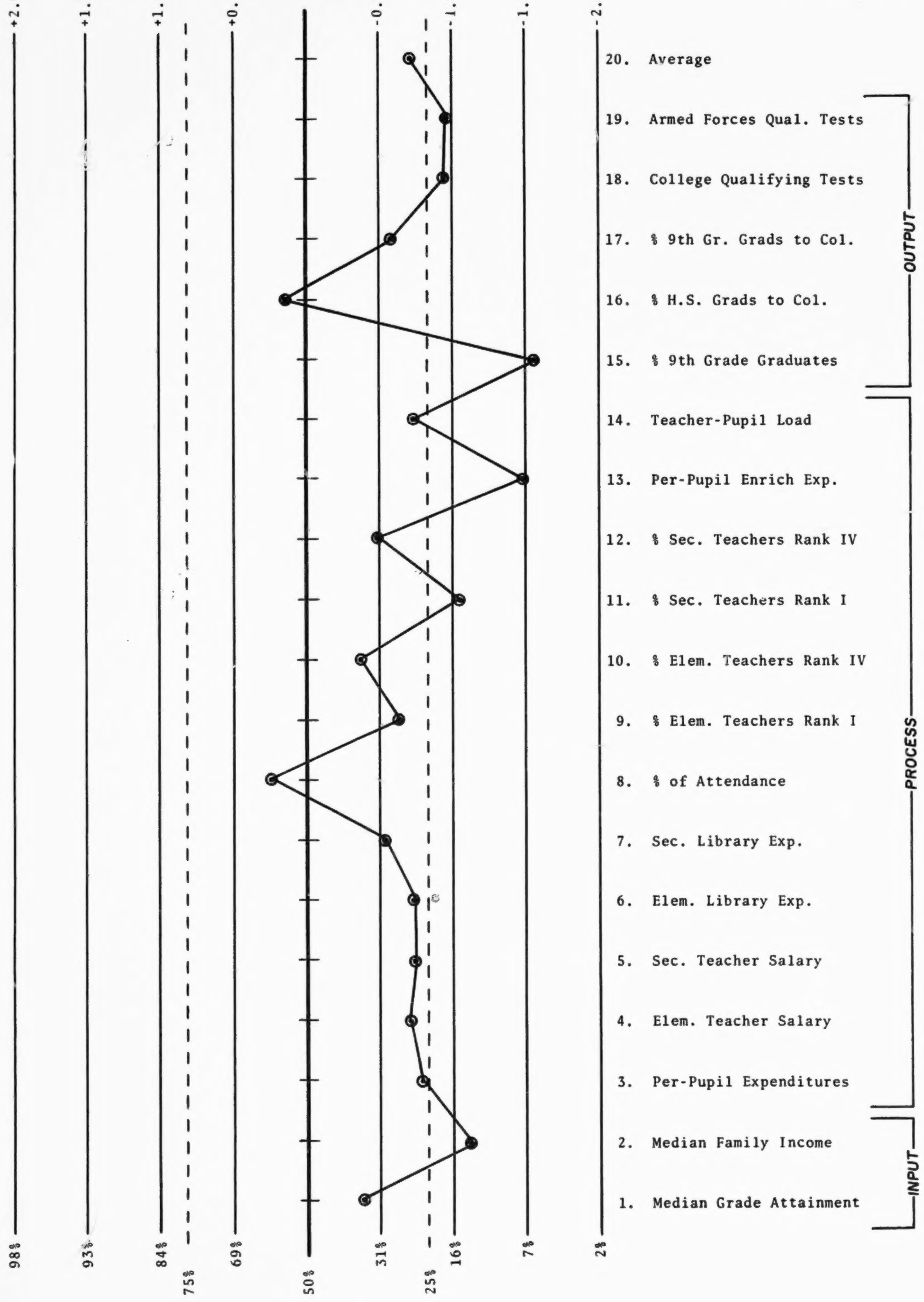
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12. % Sec. Teachers Rank IV
11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
OUTPUT
PROCESS
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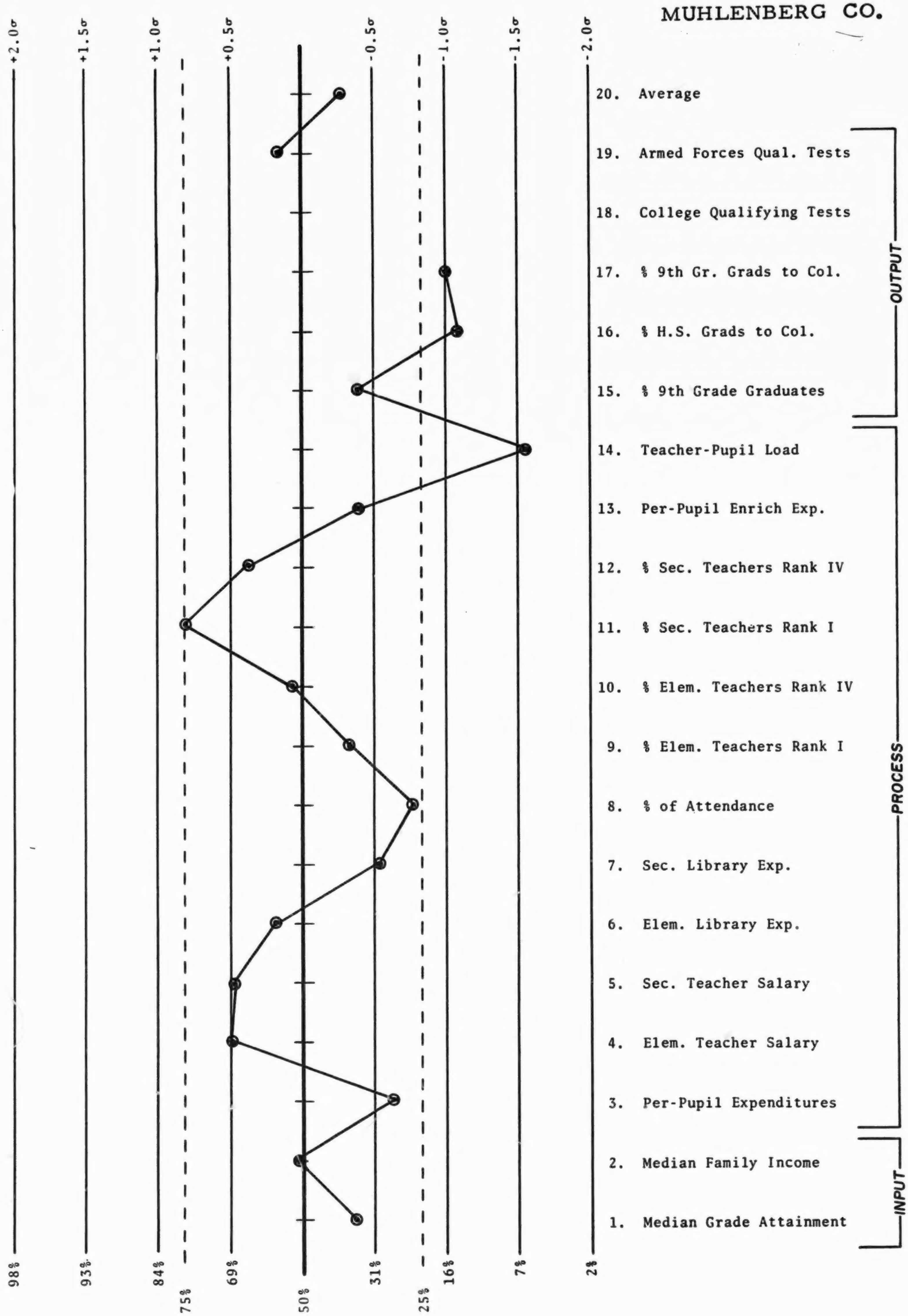
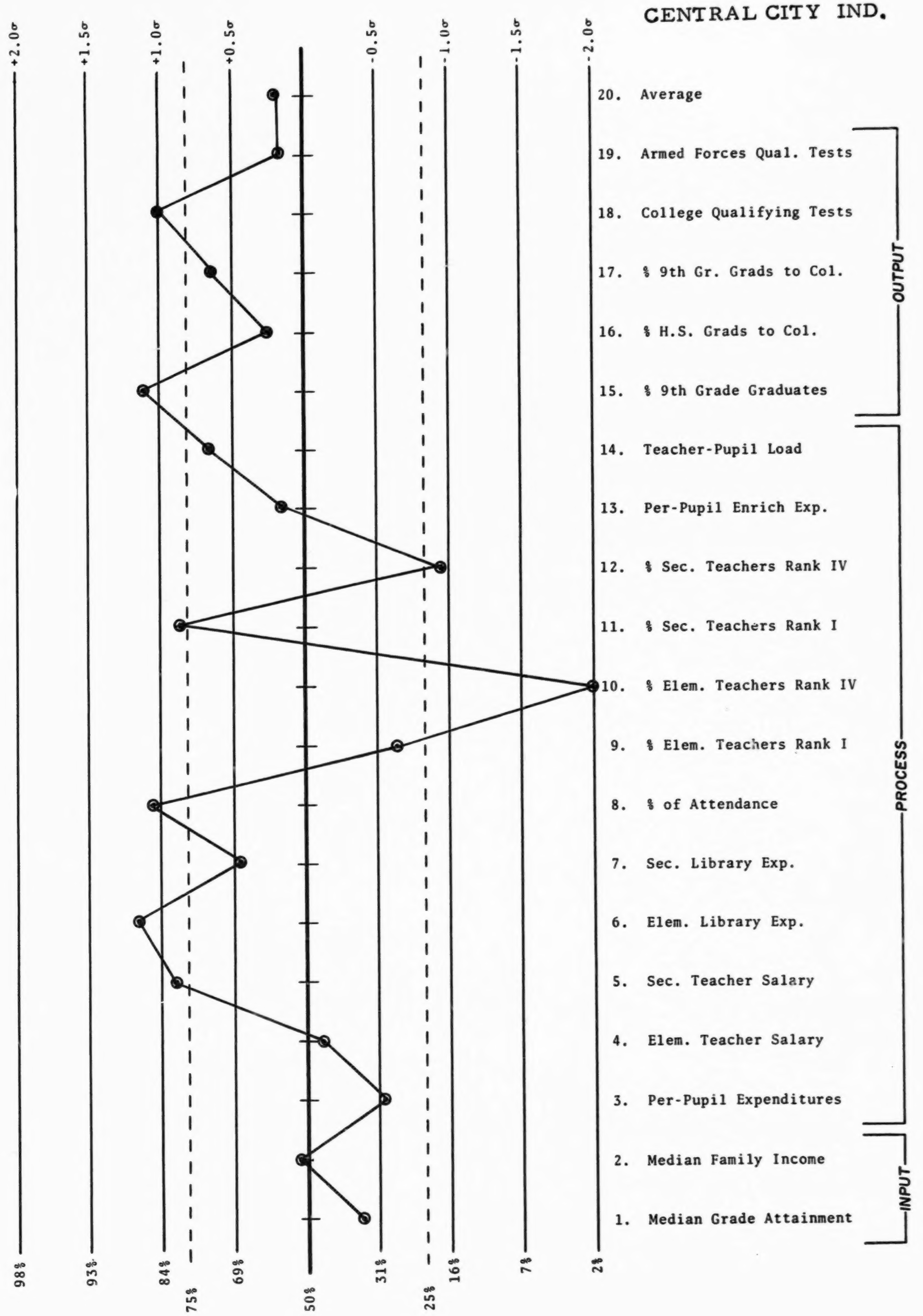
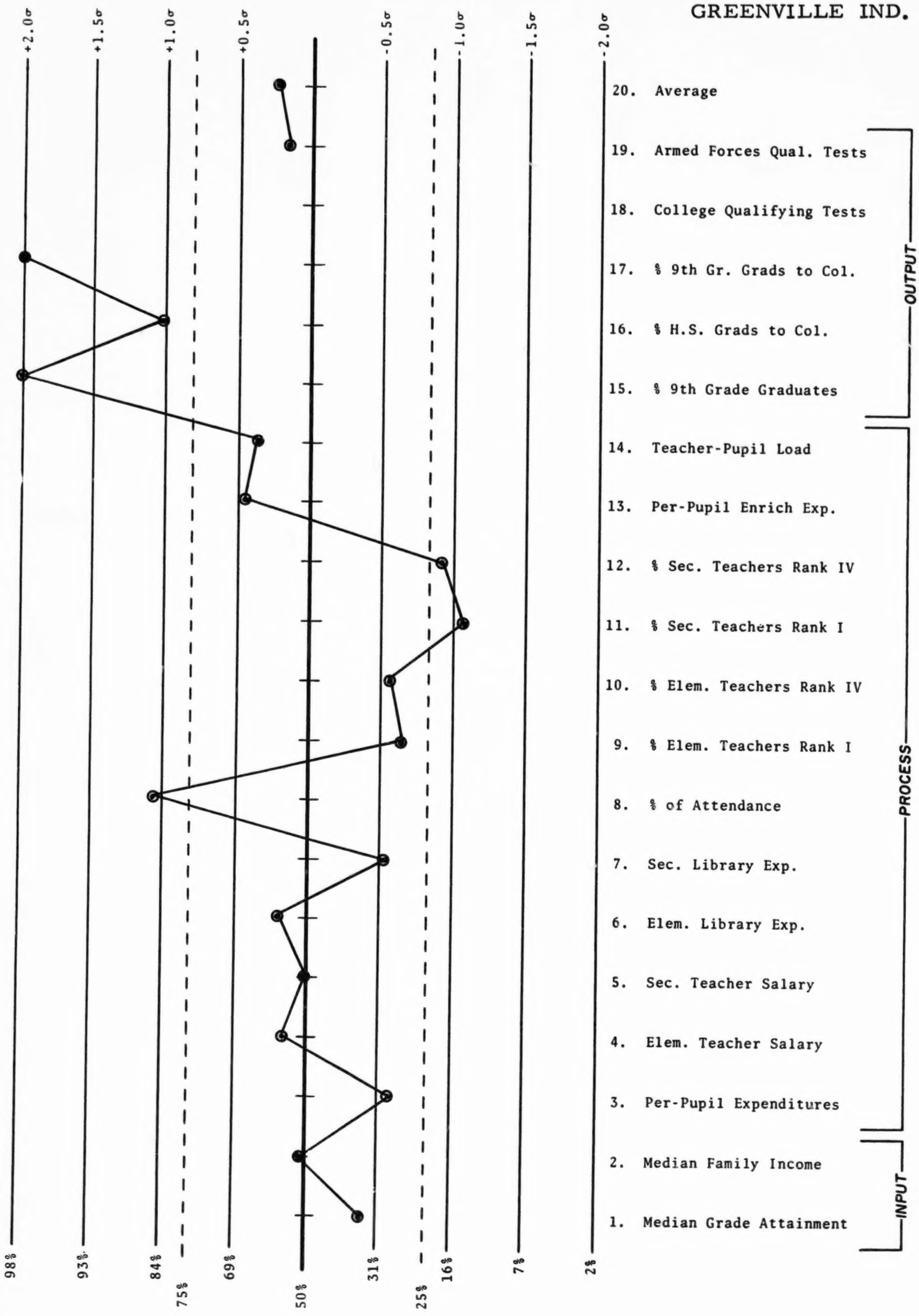
MUHLENBERG CO.



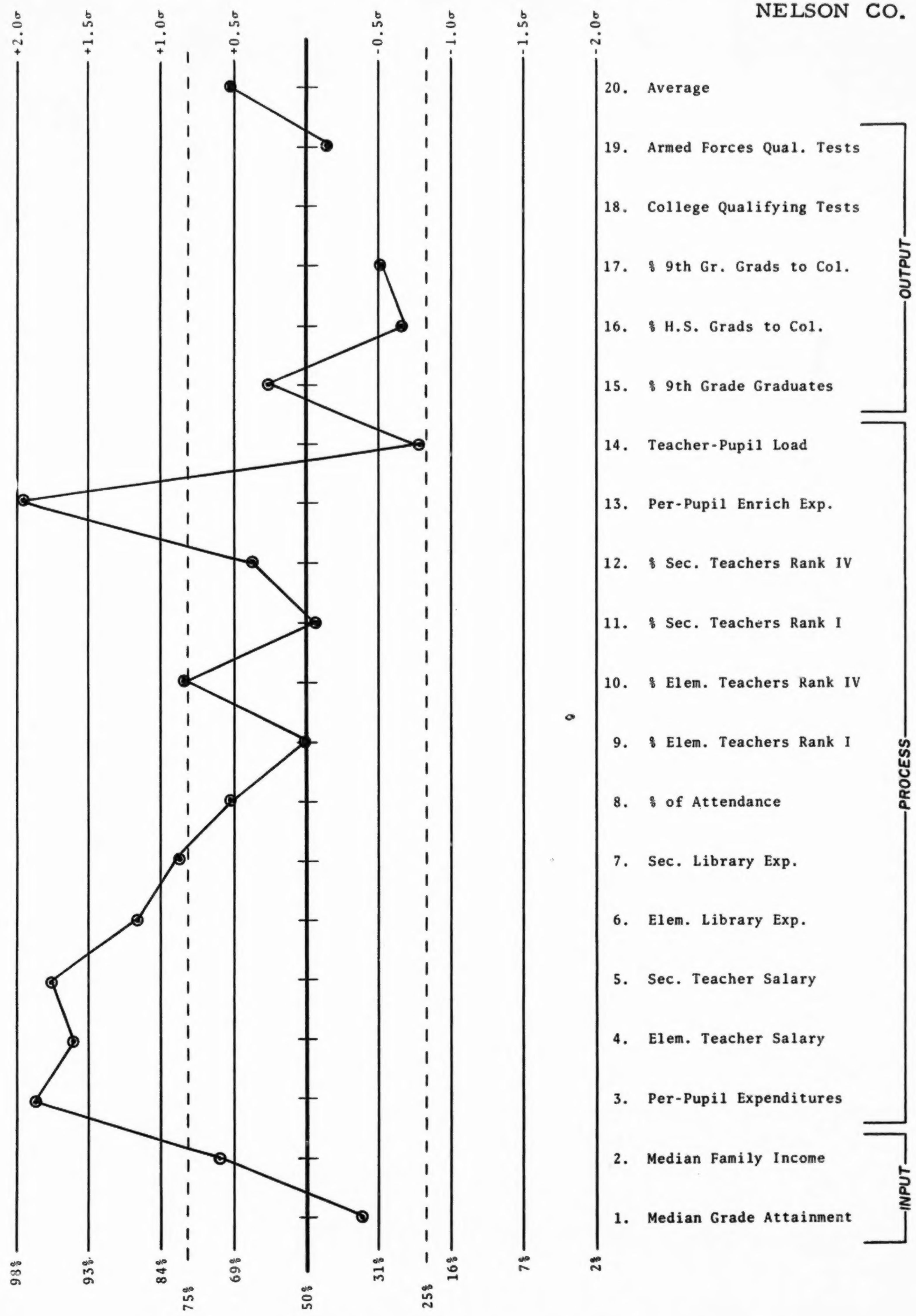
CENTRAL CITY IND.



GREENVILLE IND.



NELSON CO.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5. Sec. Teacher Salary
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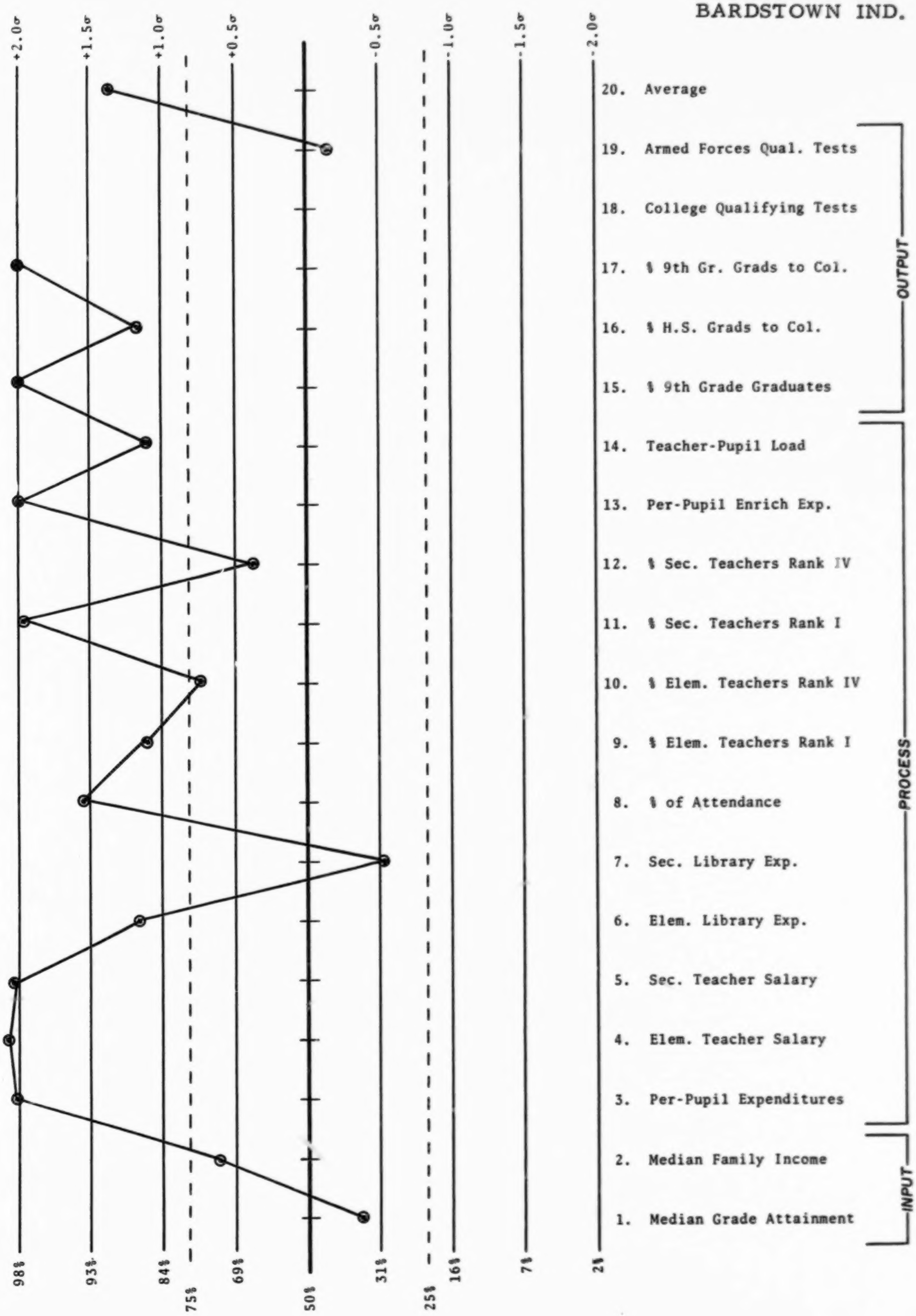
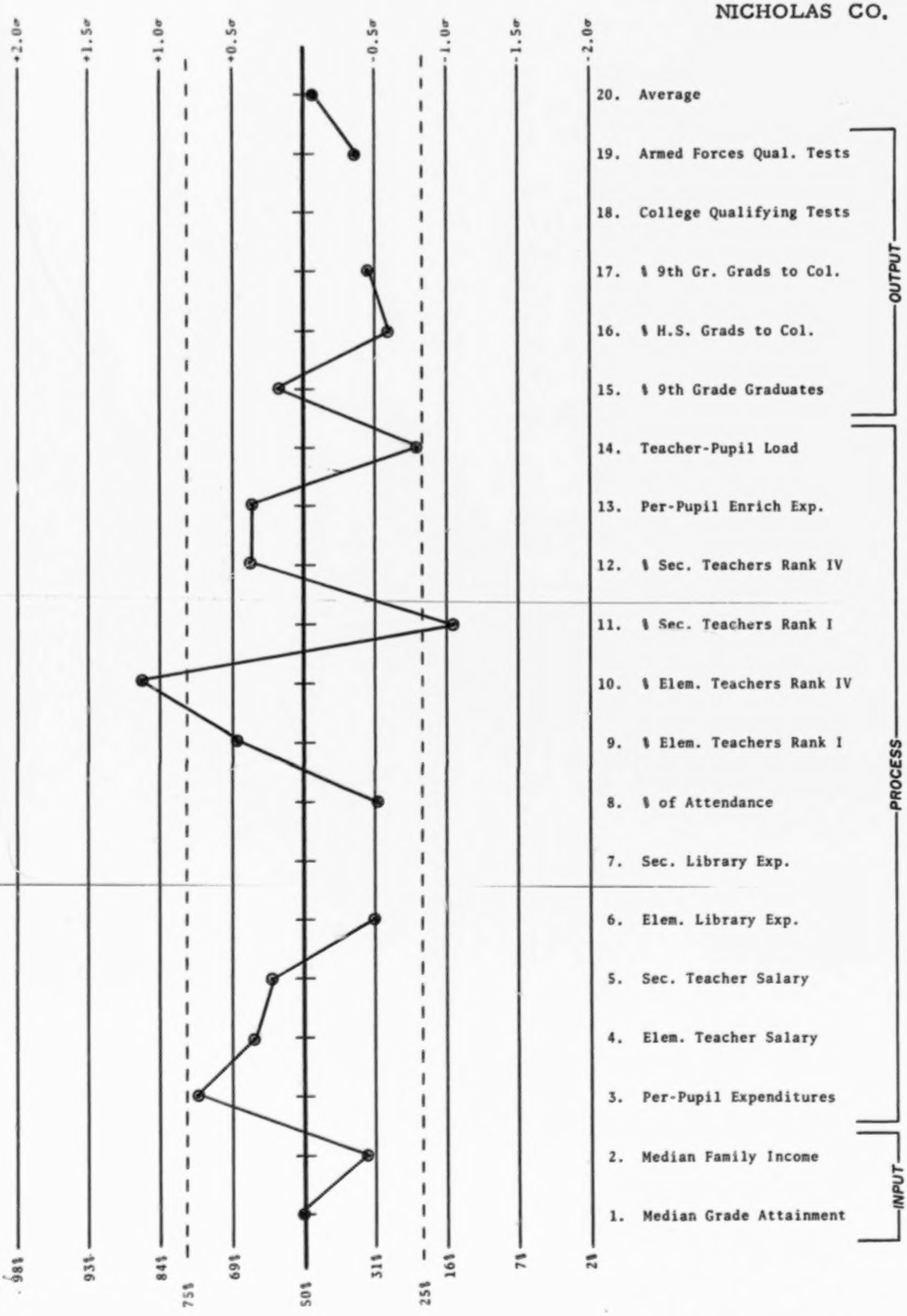
BARDSTOWN IND.



NICHOLAS CO.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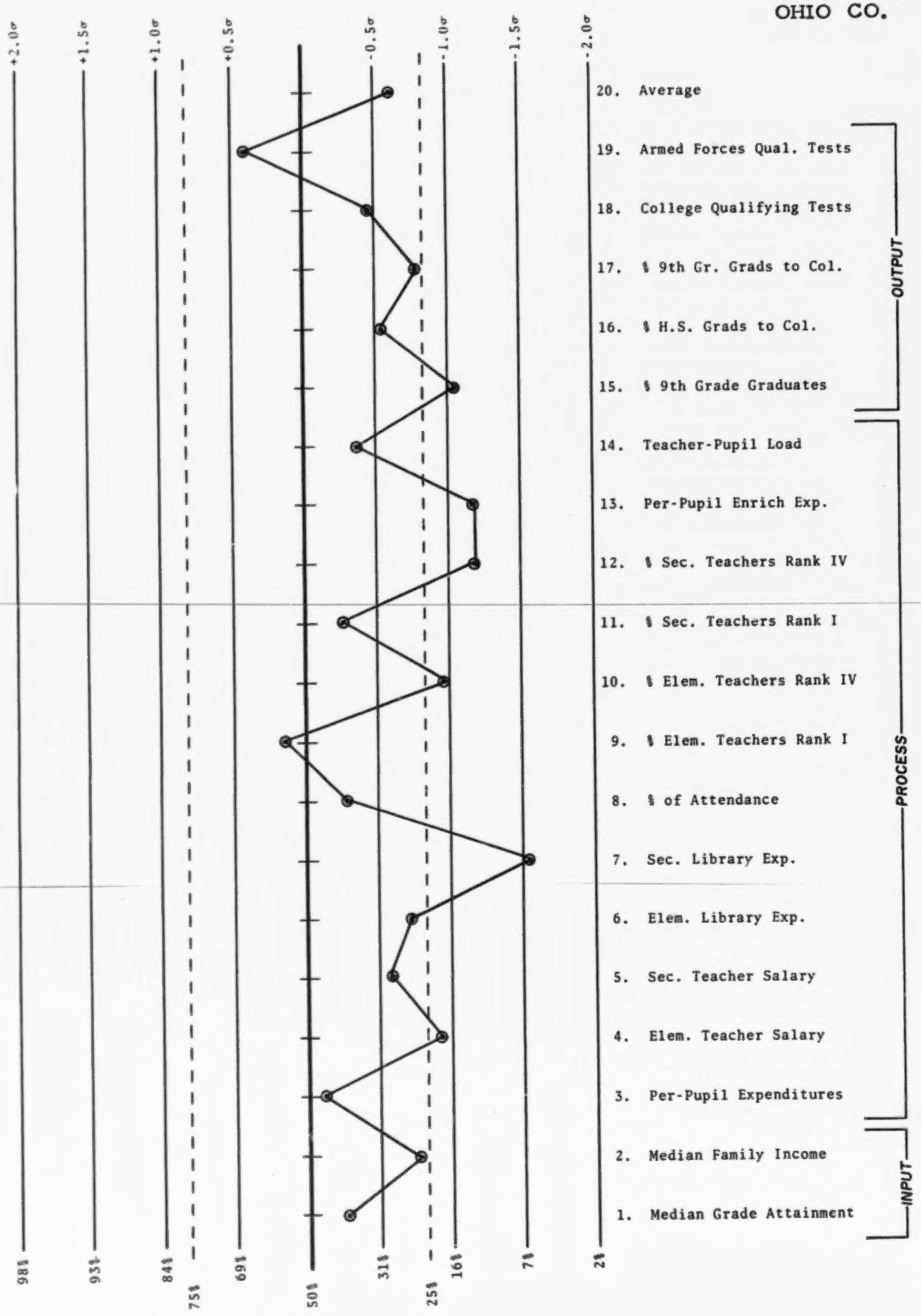
OHIO CO.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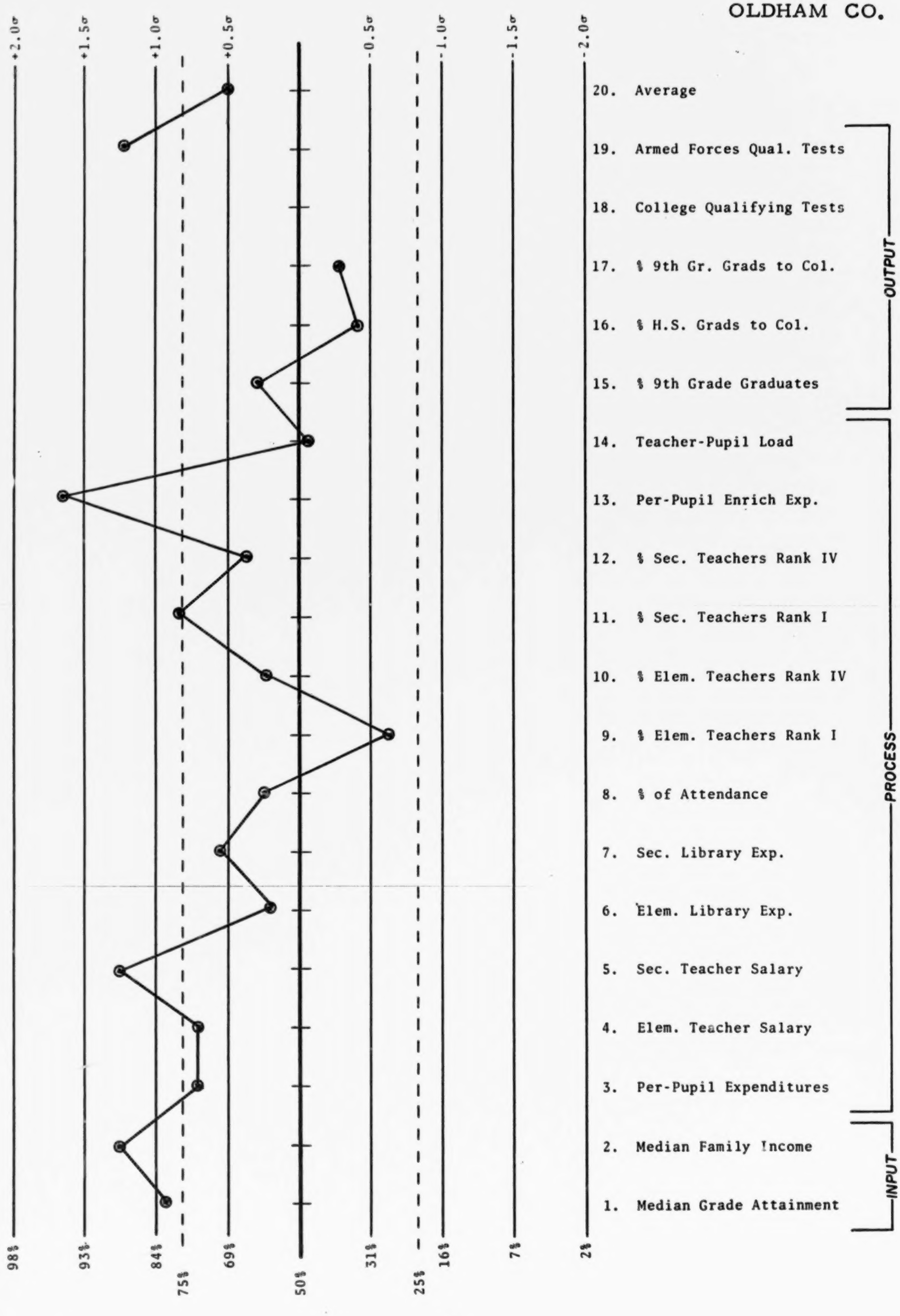
OLDHAM CO.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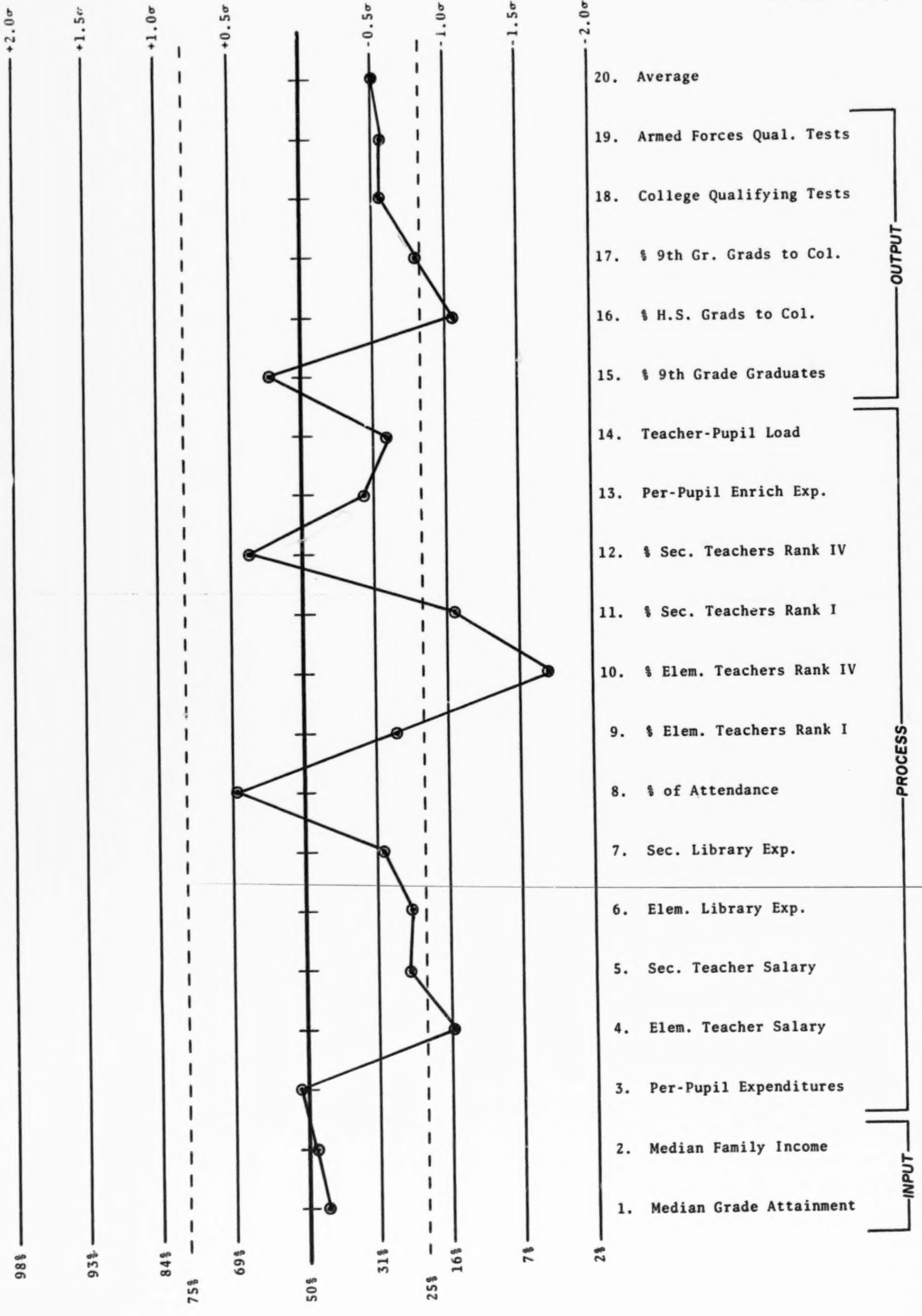
OWEN CO.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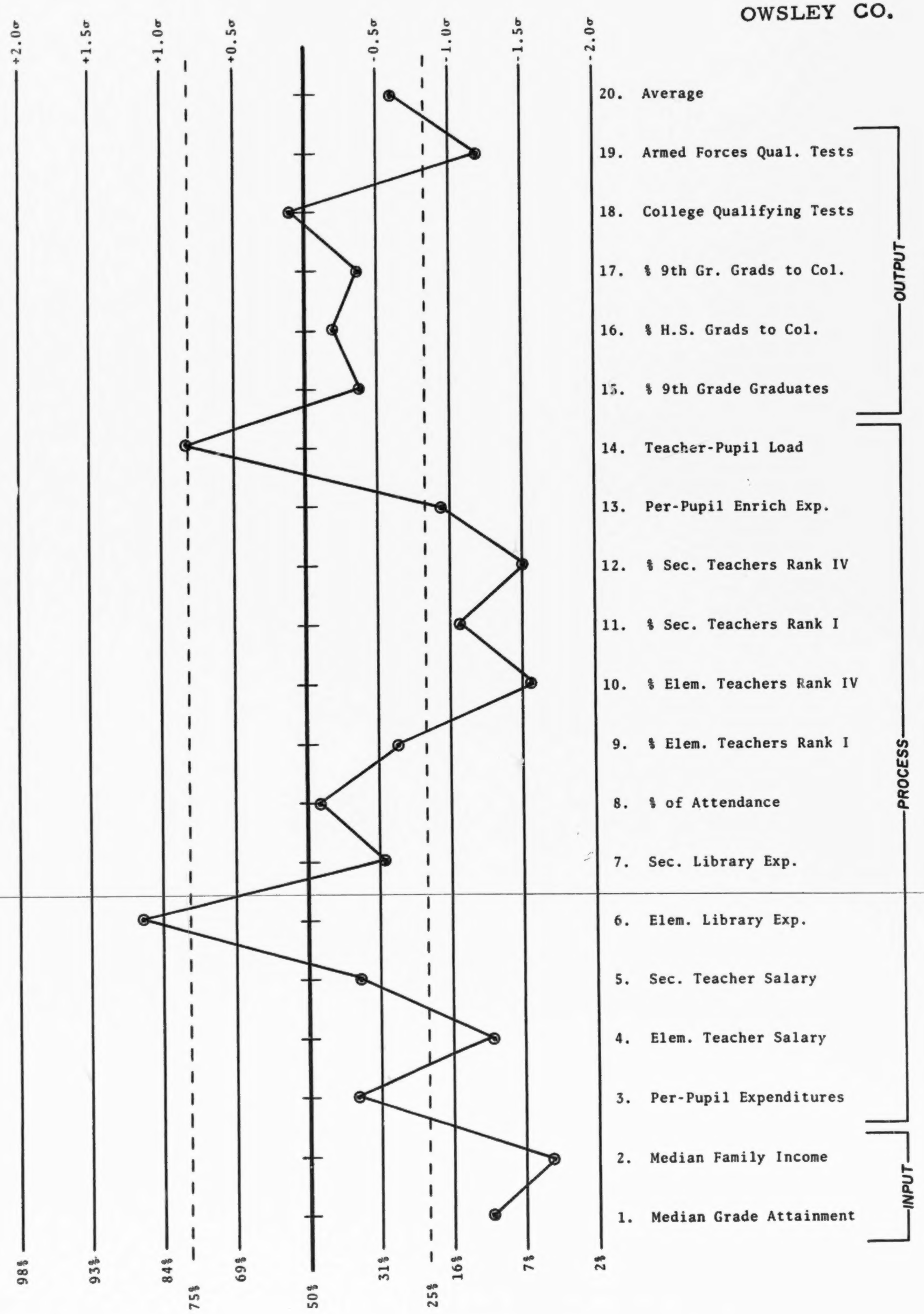
OWSLEY CO.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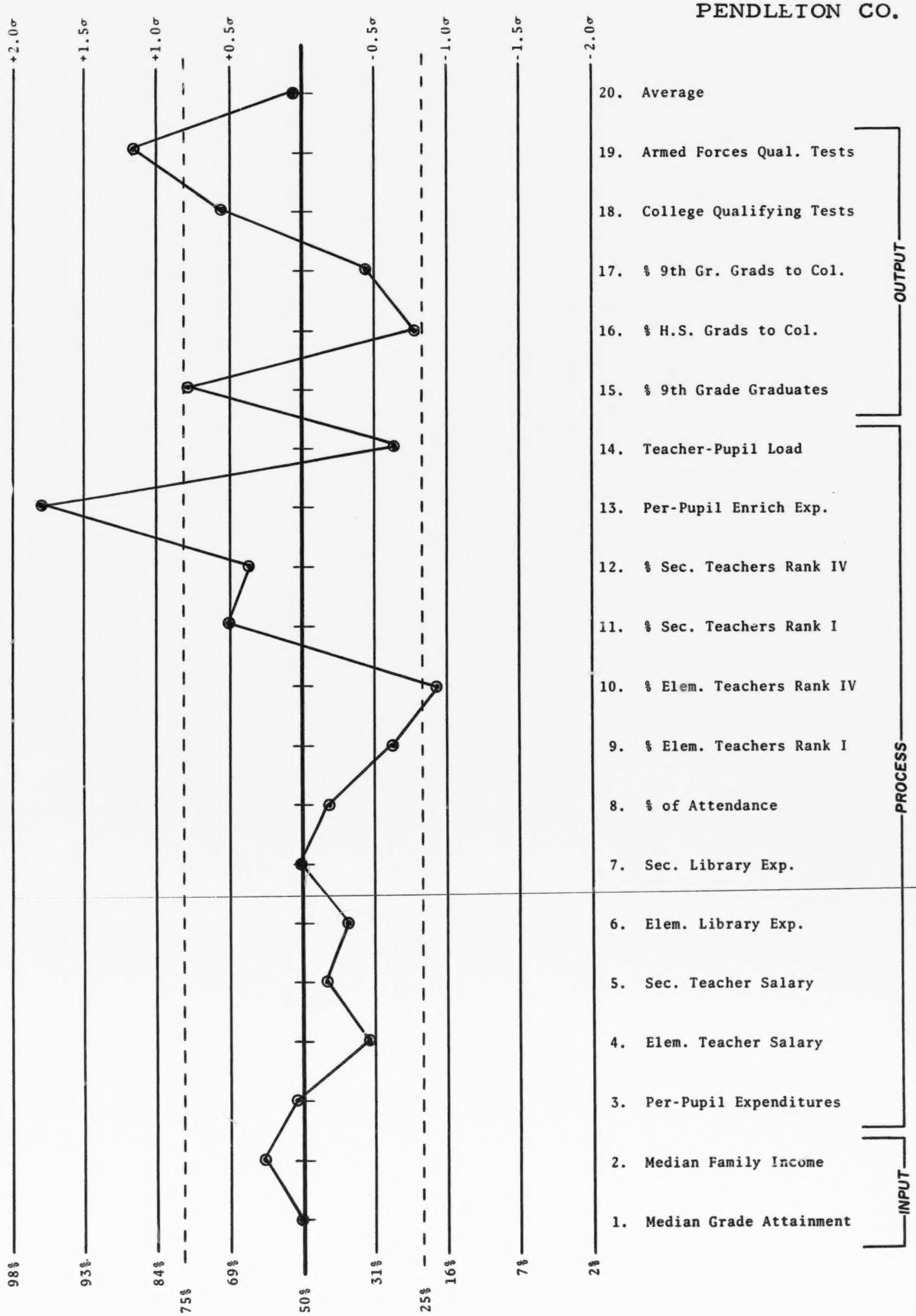
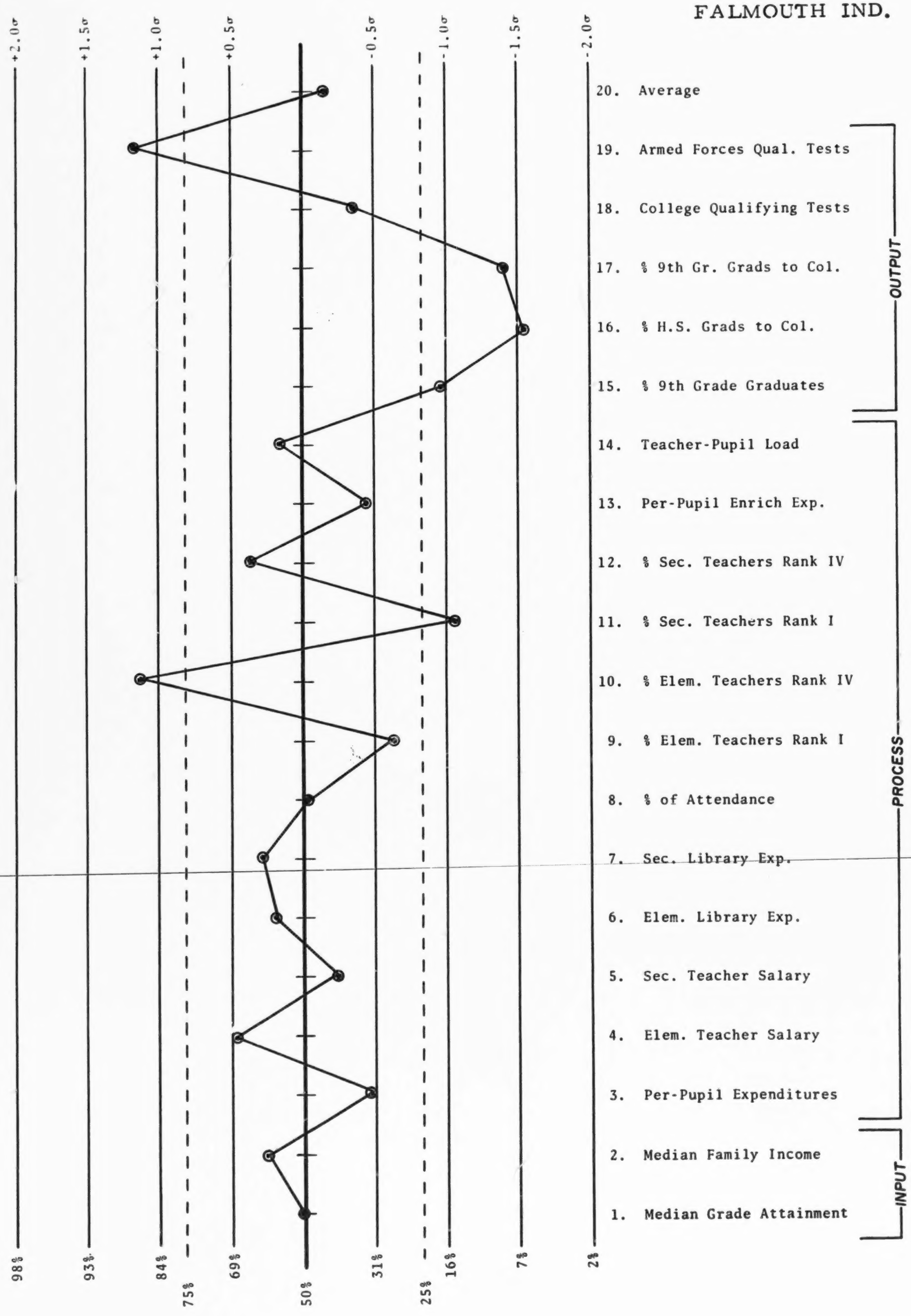
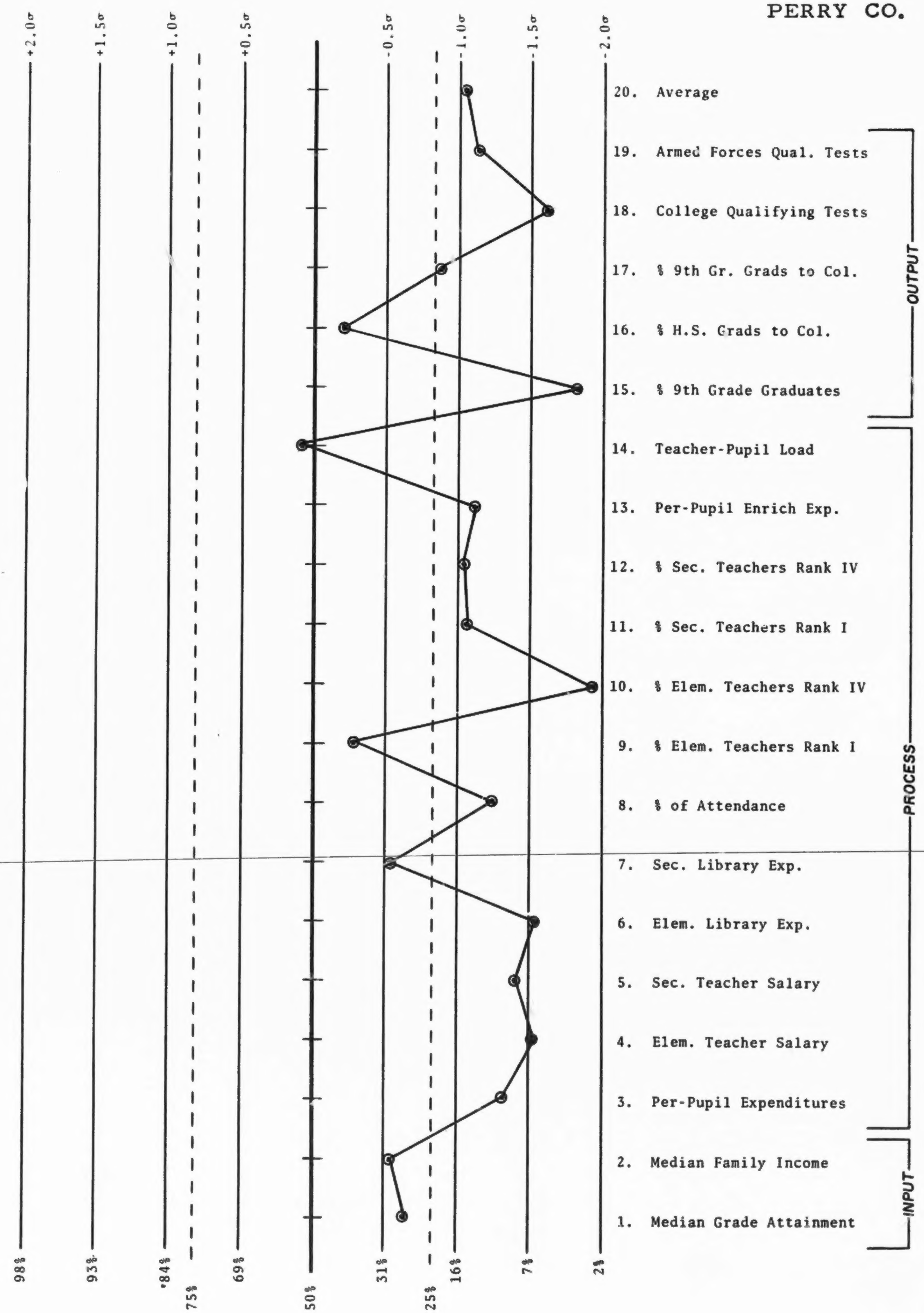
PENDLETON CO.



FALMOUTH IND.



PERRY CO.



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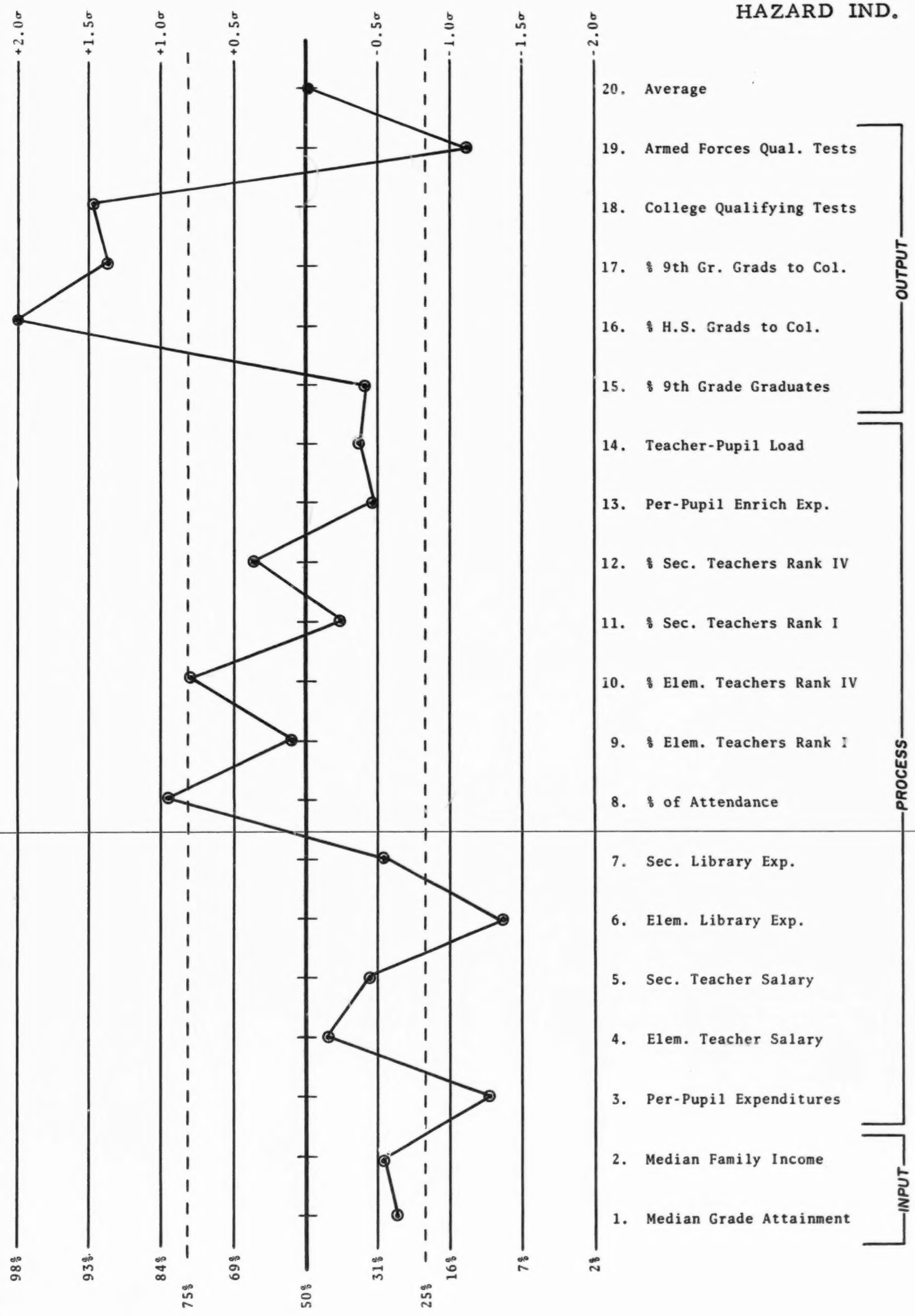
HAZARD IND.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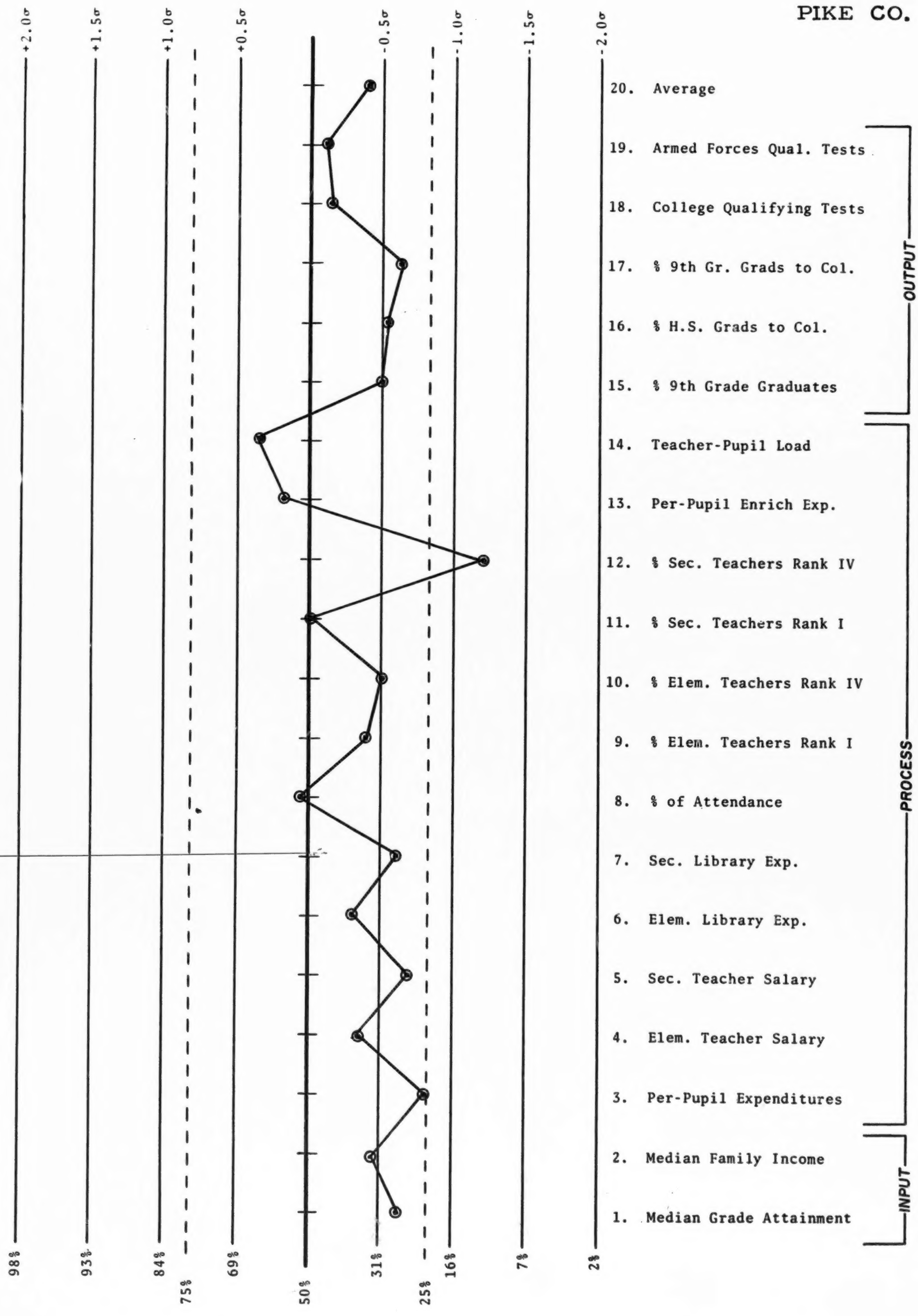
PIKE CO.



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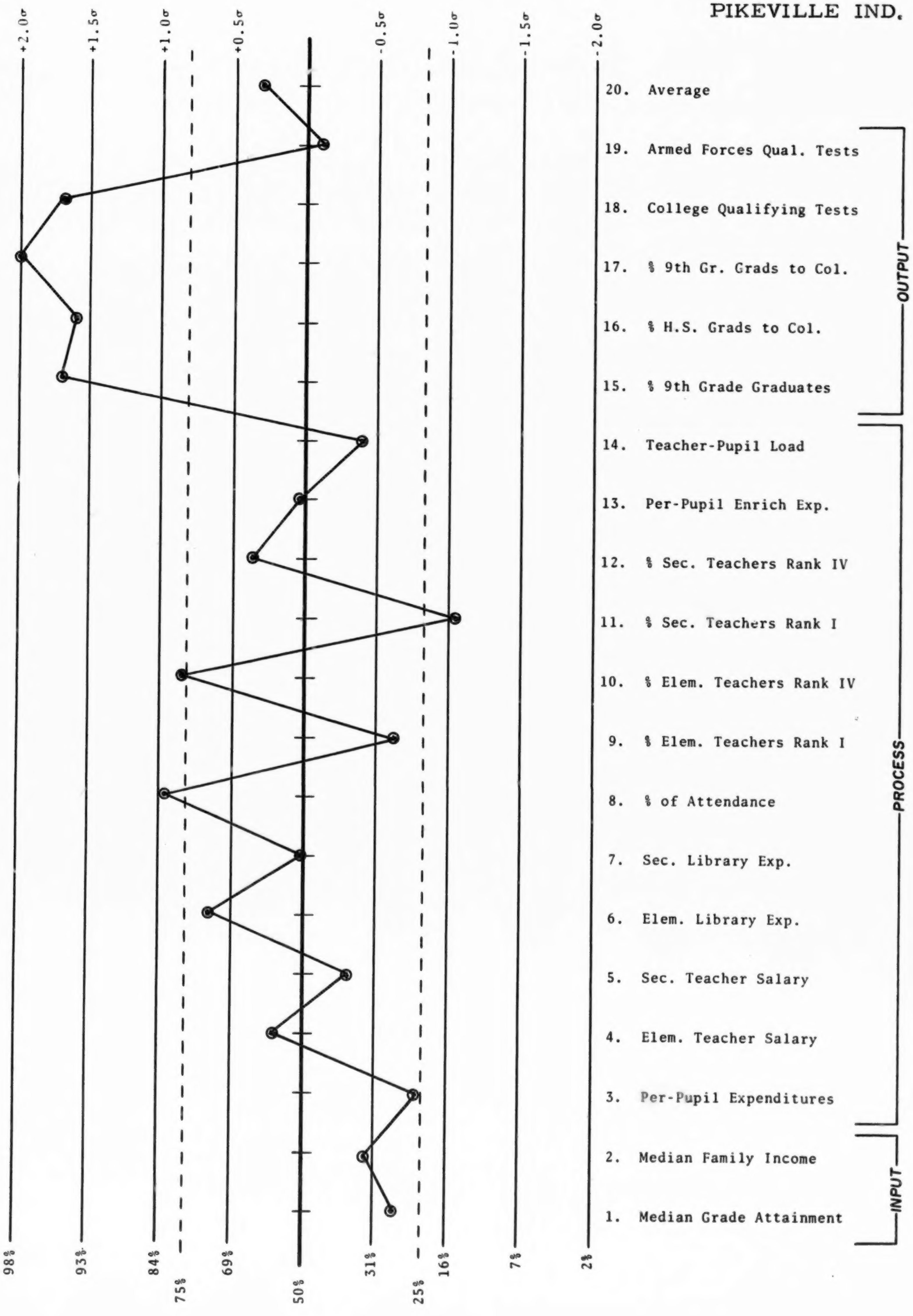
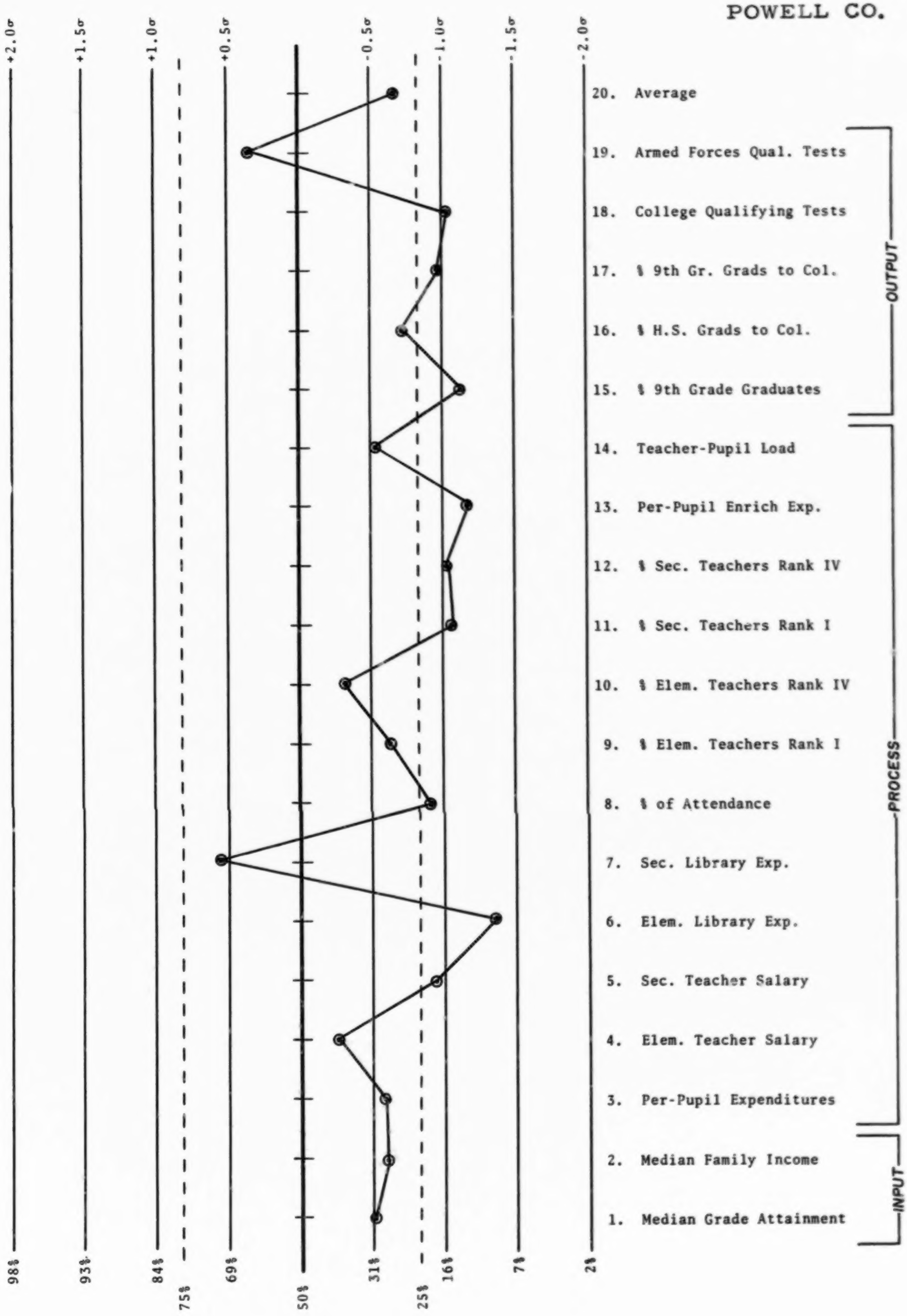
PIKEVILLE IND.



POWELL CO.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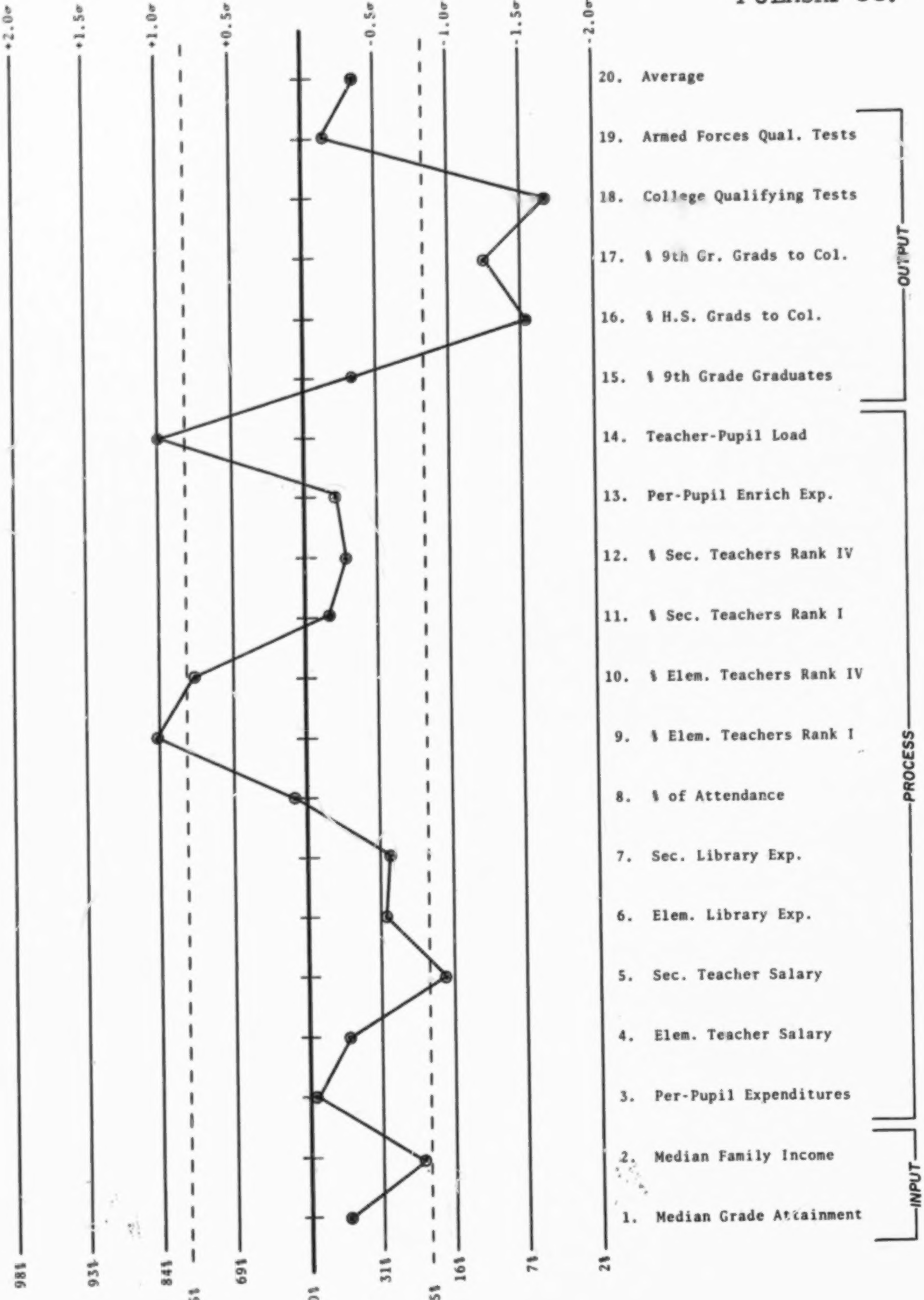
PULASKI CO.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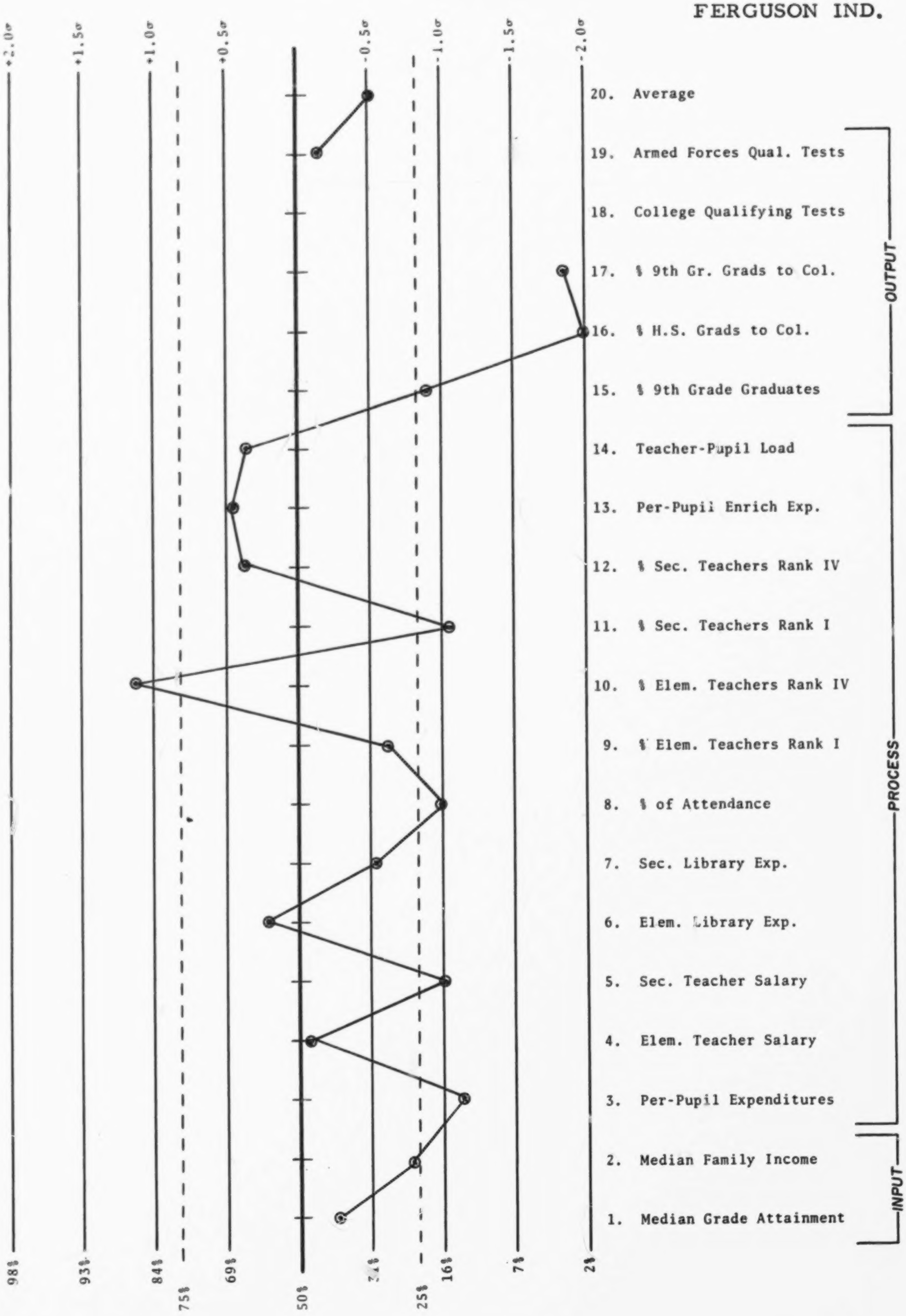
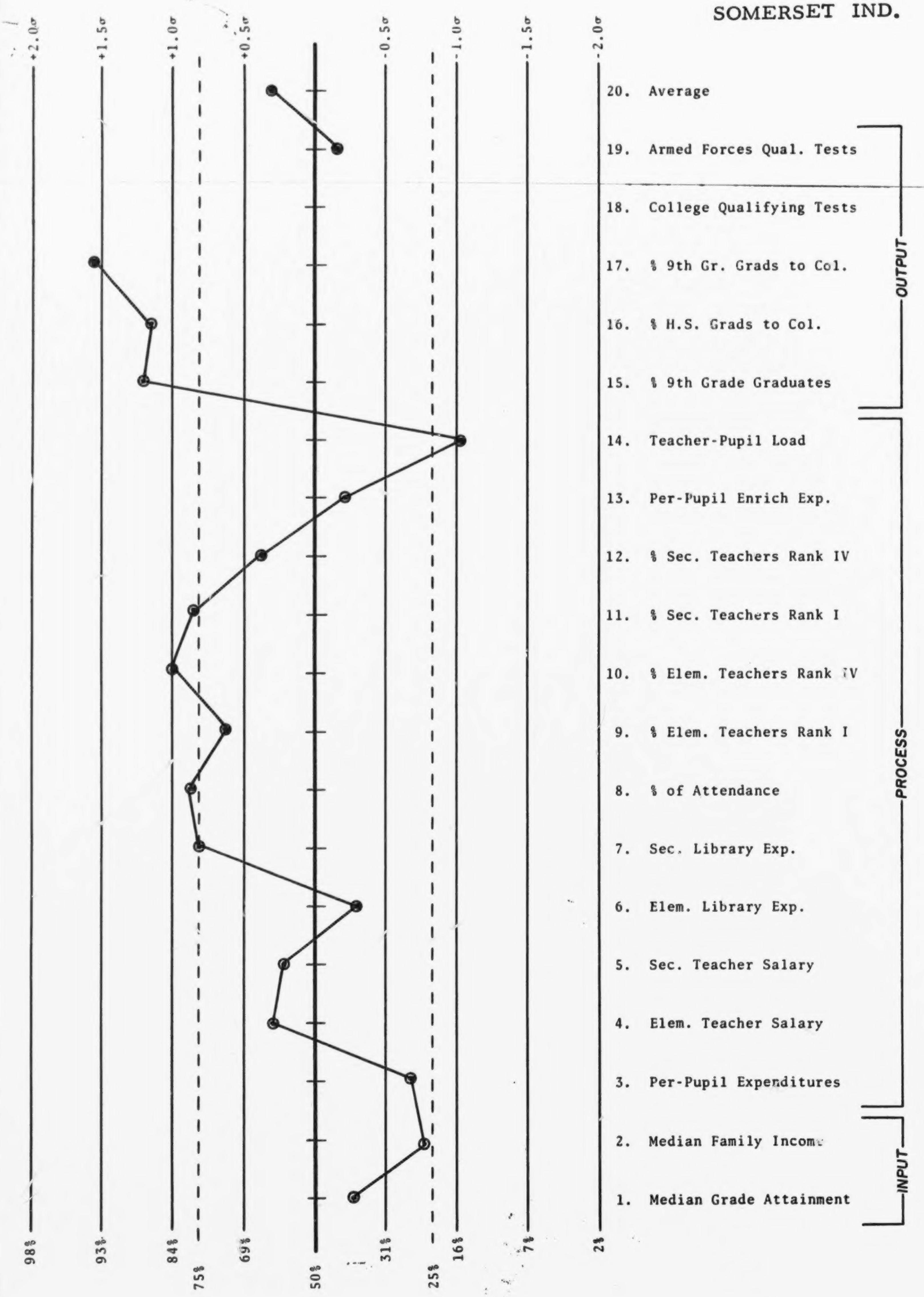
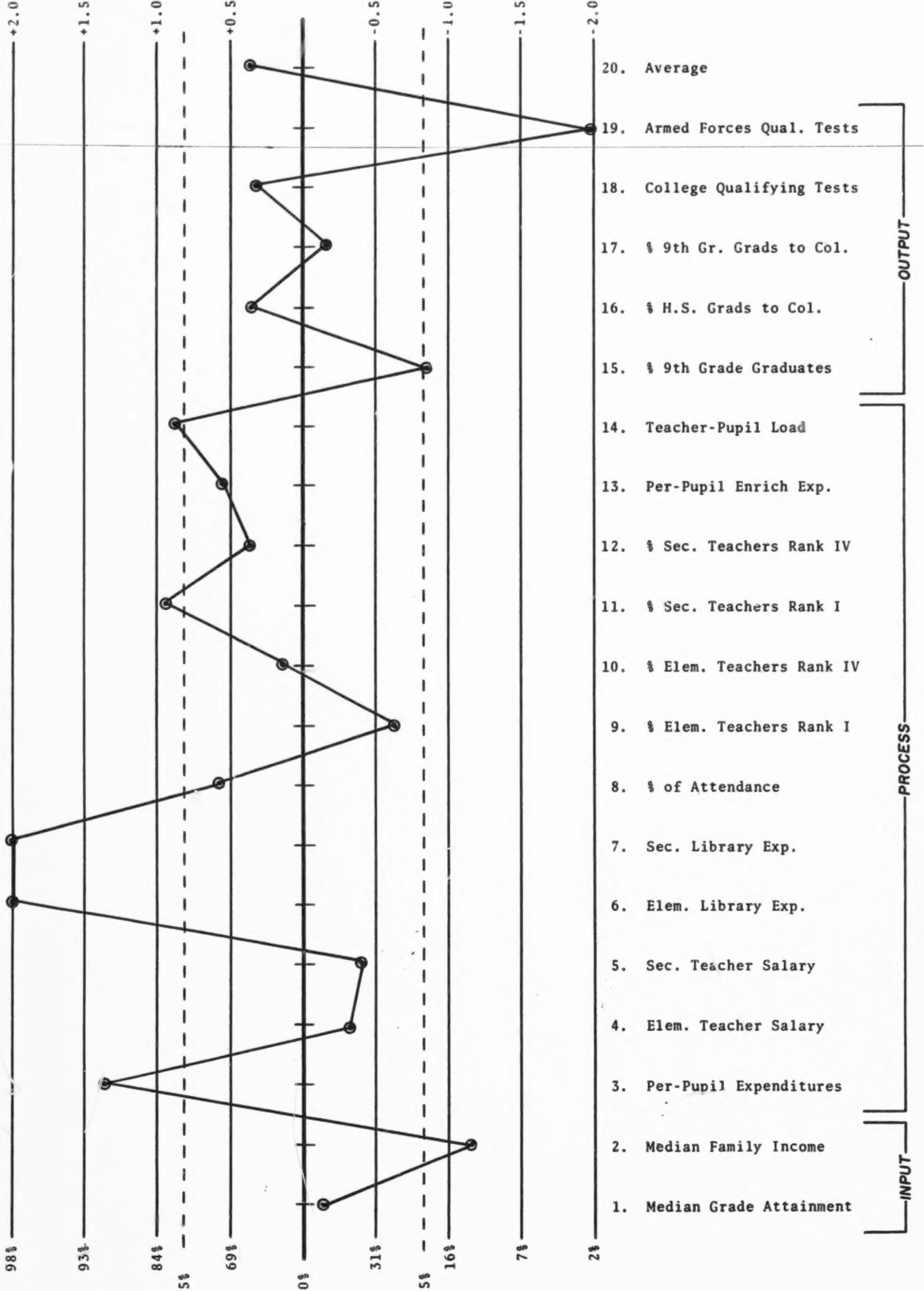
FERGUSON IND.



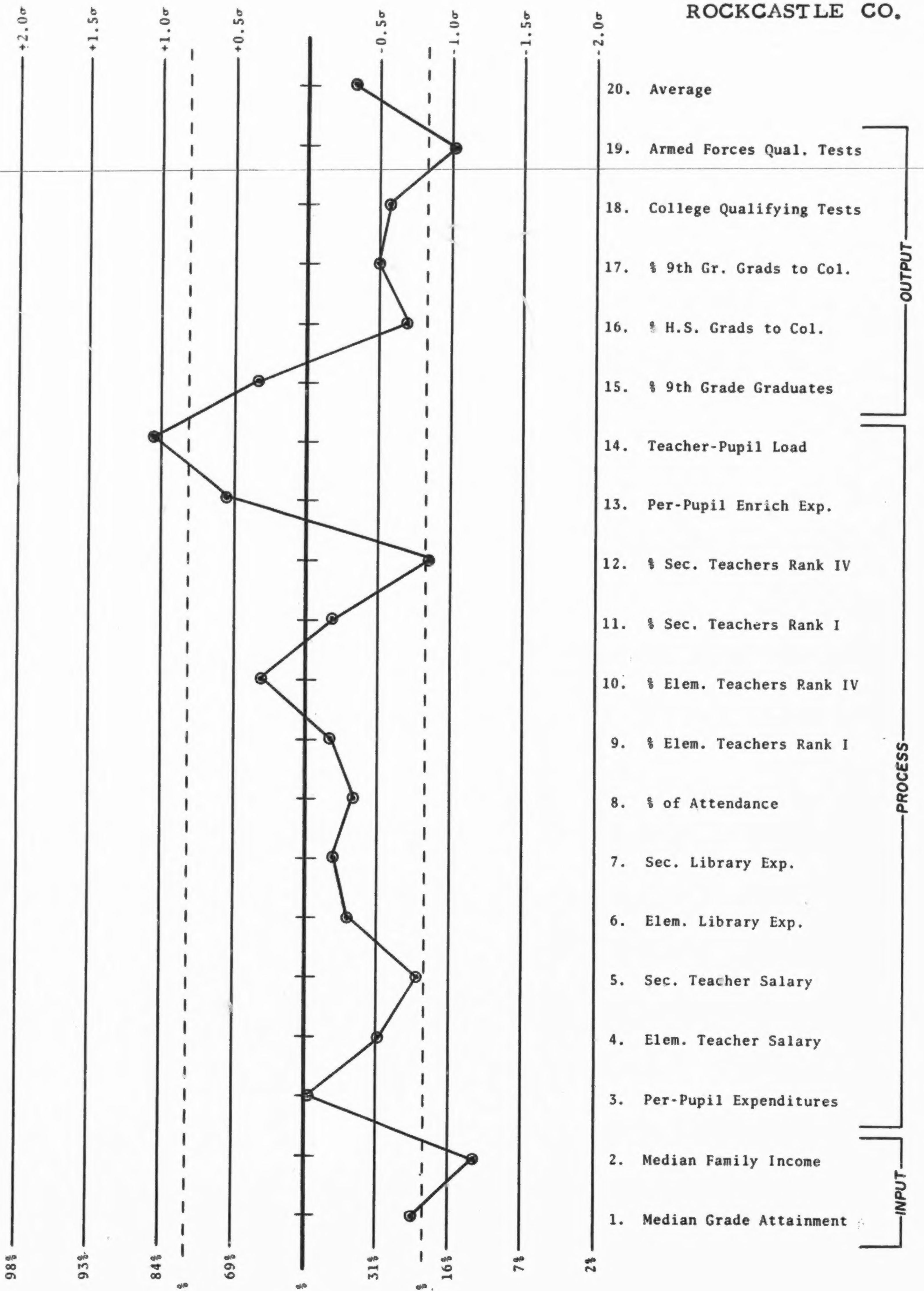
SOMERSET IND.



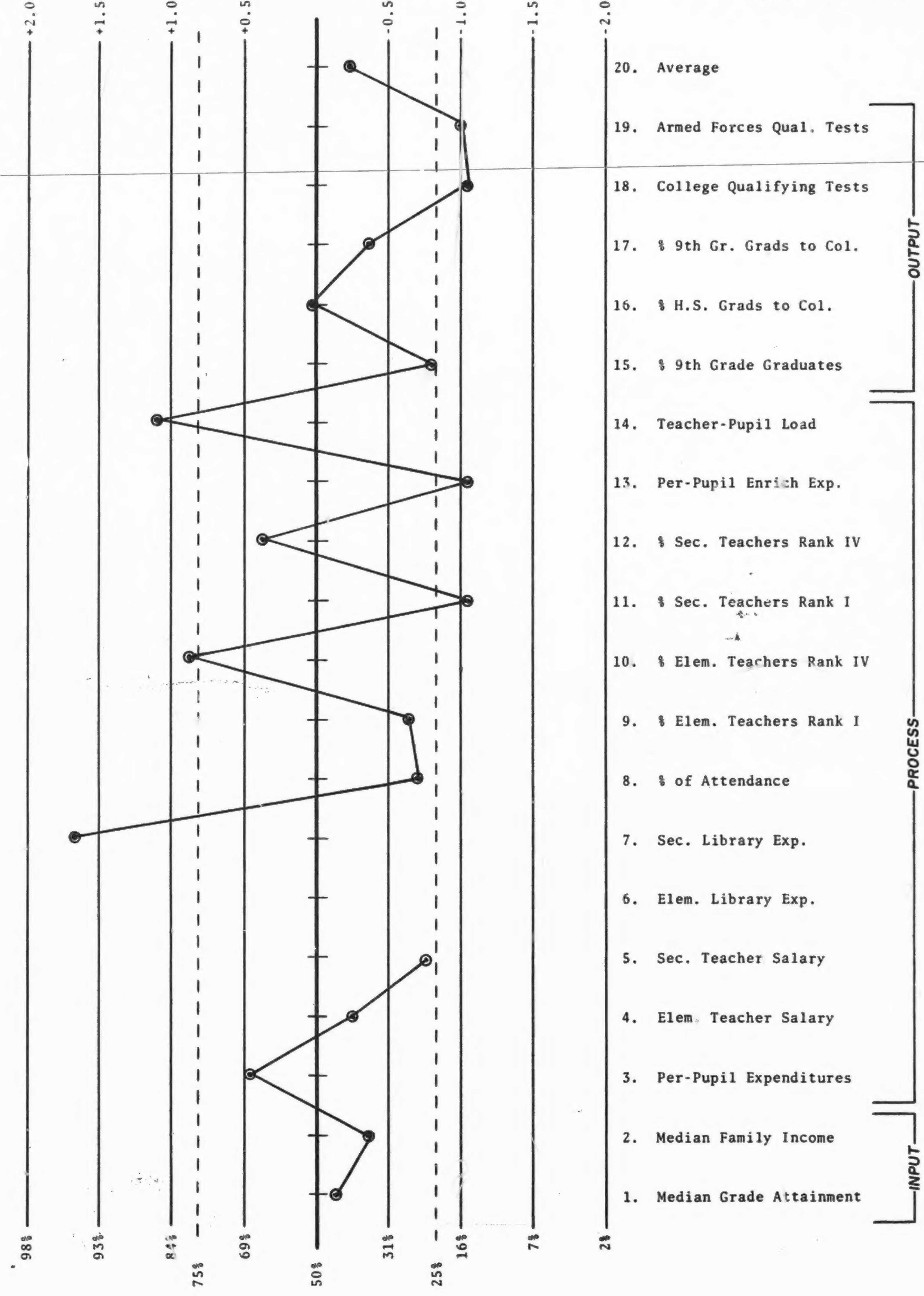
ROBERTSON CO.



ROCKCASTLE CO.



ROWAN CO.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13. Per-Pupil Enrich Exp.
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11. % Sec. Teachers Rank I
10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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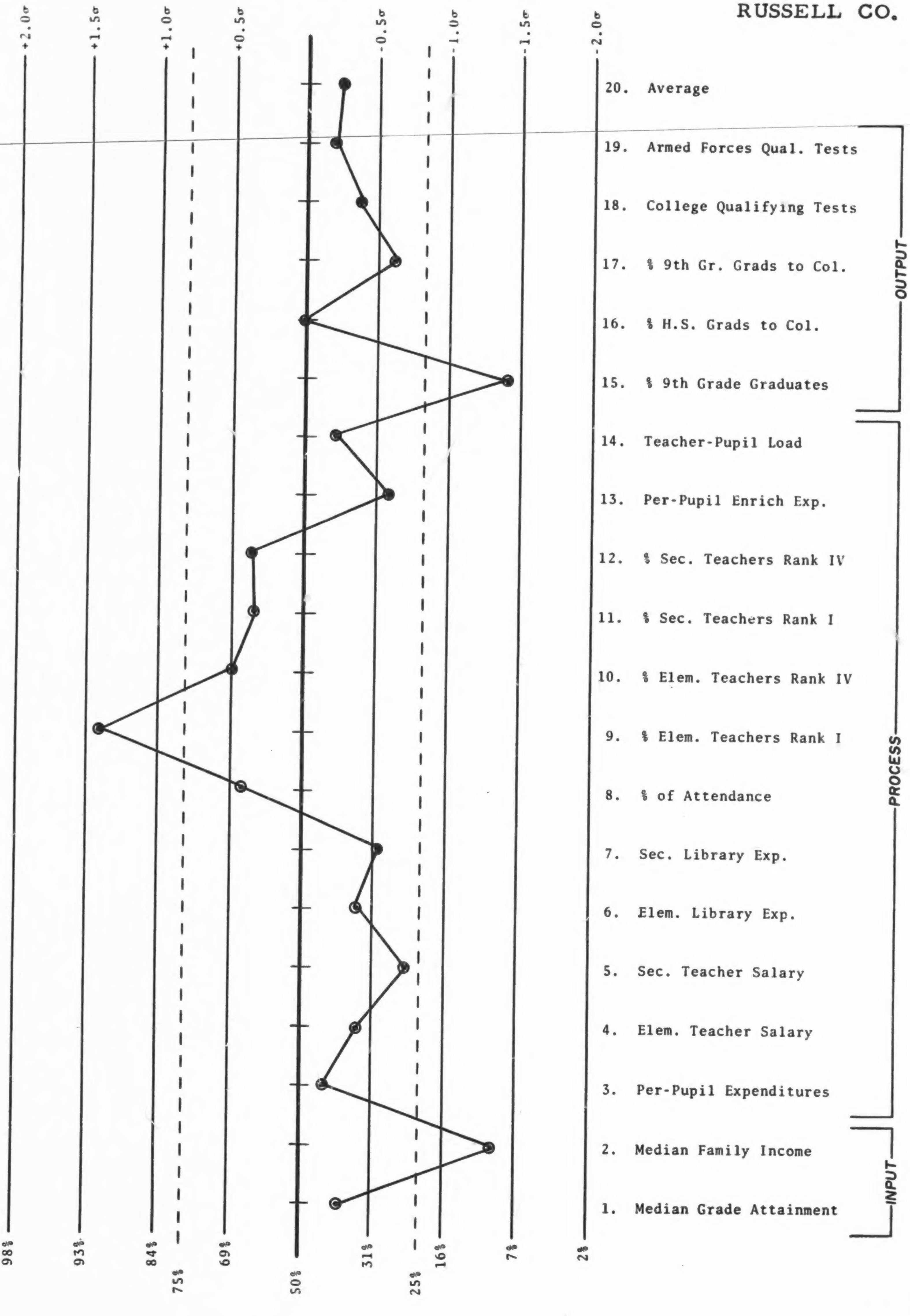
RUSSELL CO.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20. Average
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18. College Qualifying Tests
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16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
6. Elem. Library Exp.
5. Sec. Teacher Salary
4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
OUTPUT
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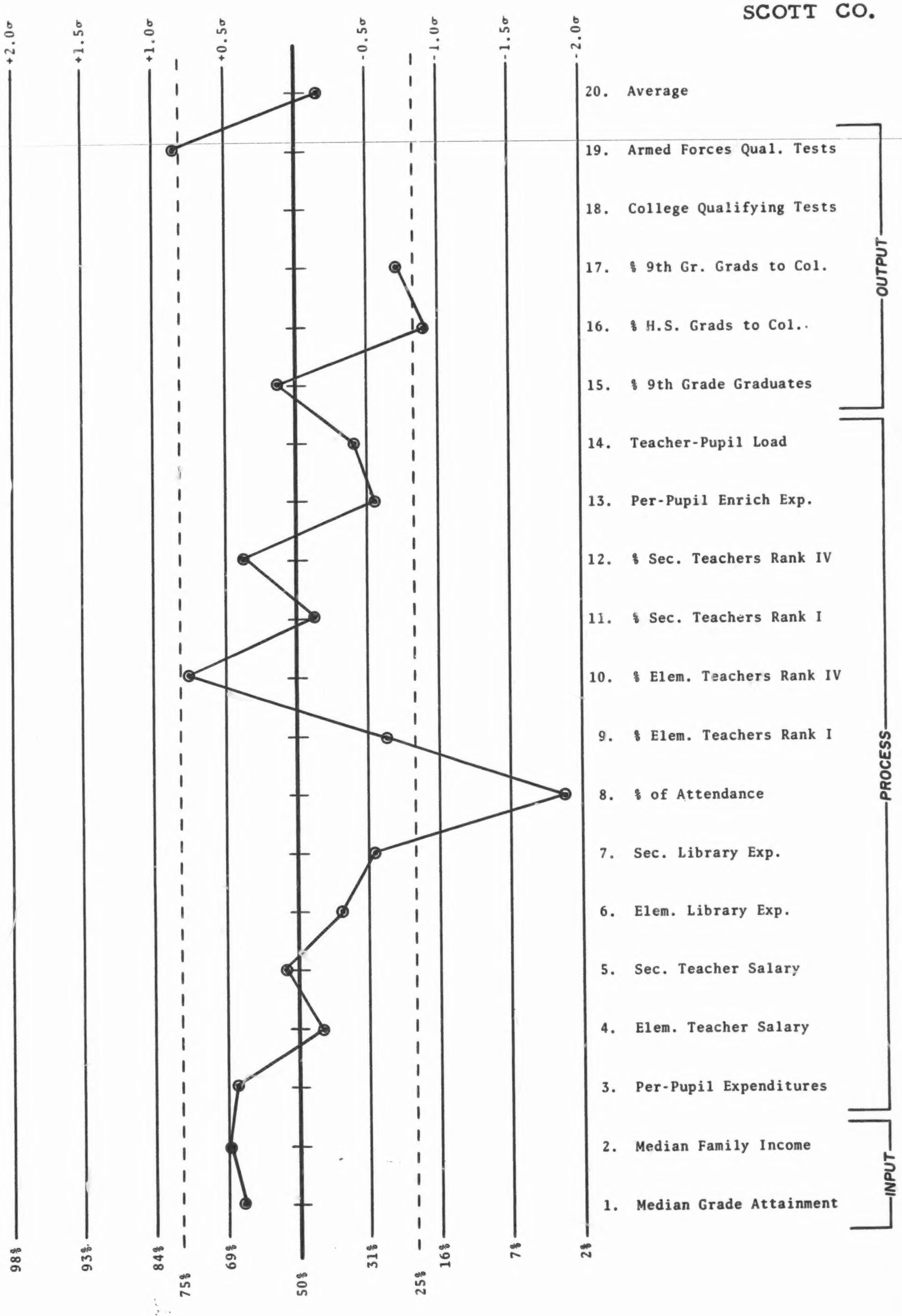
SCOTT CO.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18. College Qualifying Tests
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16. % H.S. Grads to Col.
15. % 9th Grade Graduates
14. Teacher-Pupil Load
13. Per-Pupil Enrich Exp.
12. % Sec. Teachers Rank IV
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10. % Elem. Teachers Rank IV
9. % Elem. Teachers Rank I
8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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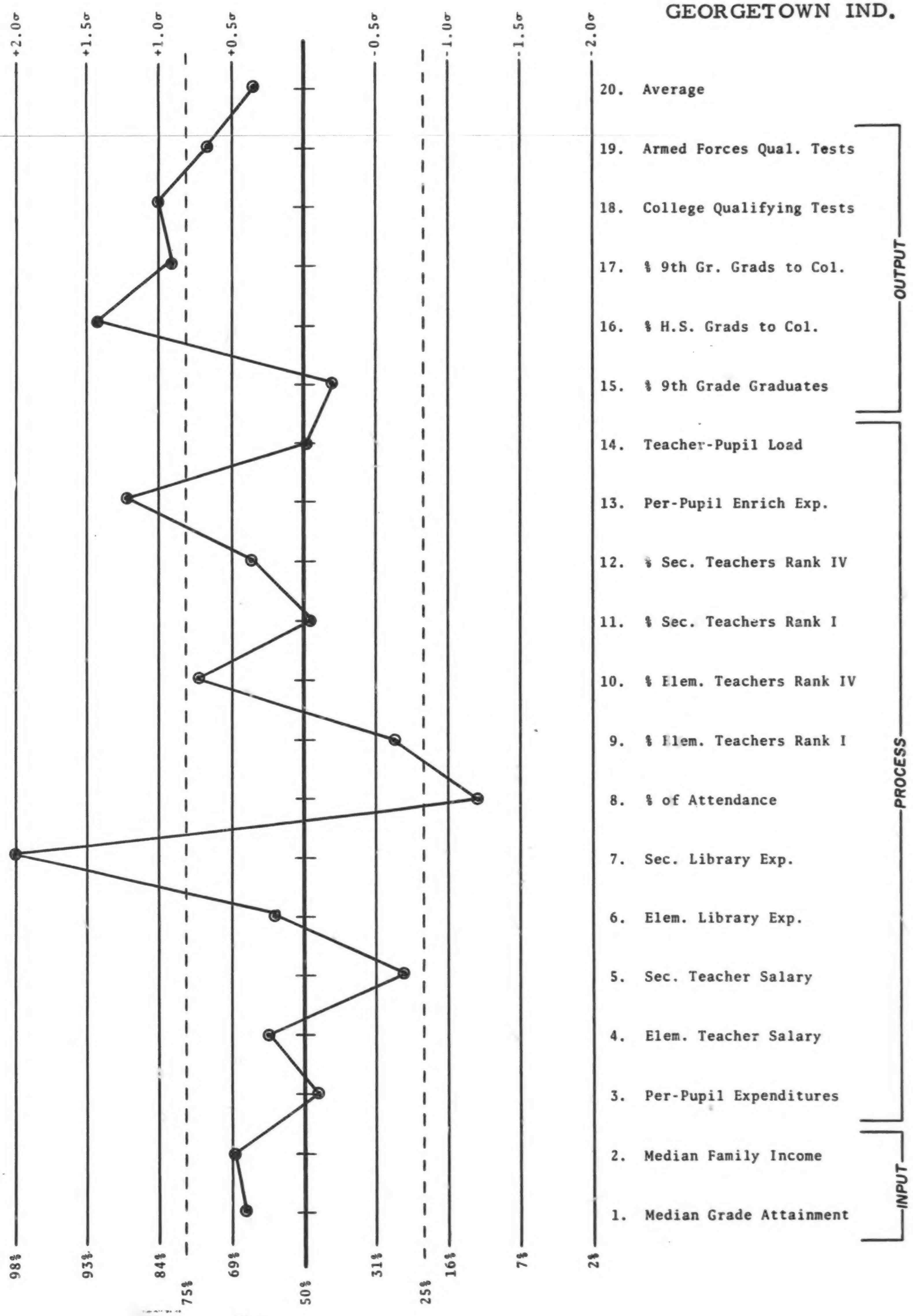
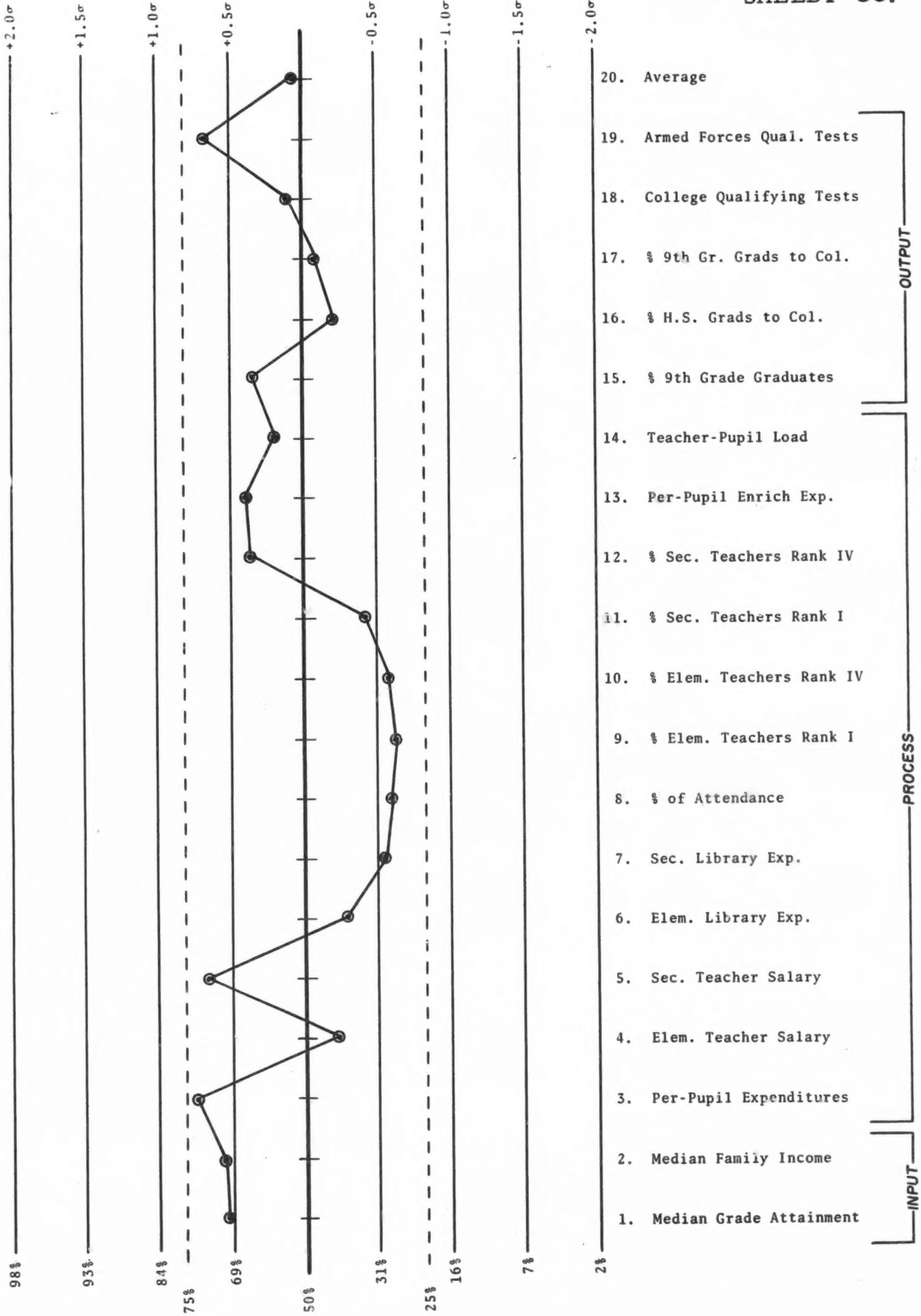
GEORGETOWN IND.



SHELBY CO.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15. % 9th Grade Graduates
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13. Per-Pupil Enrich Exp.
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8. % of Attendance
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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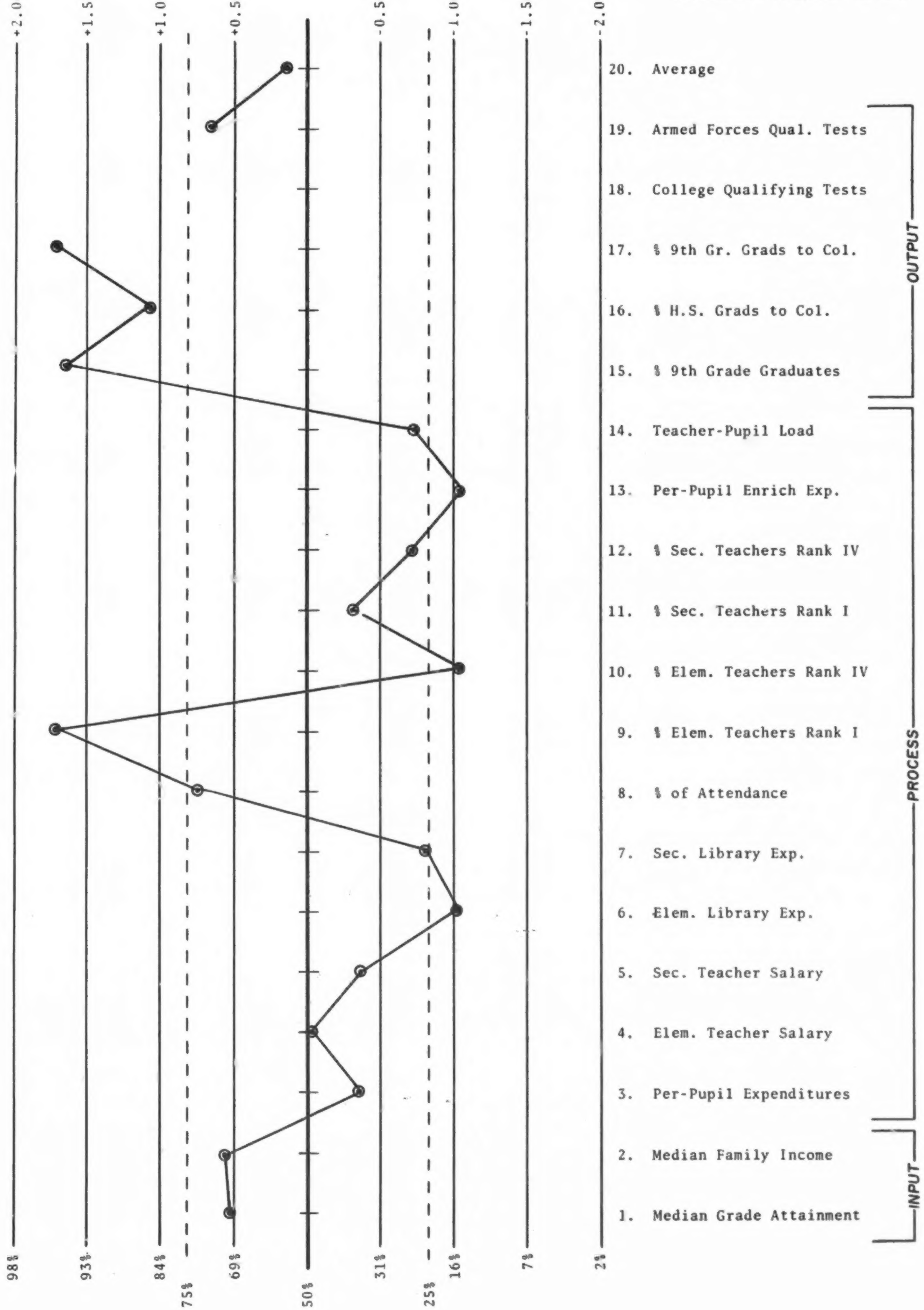
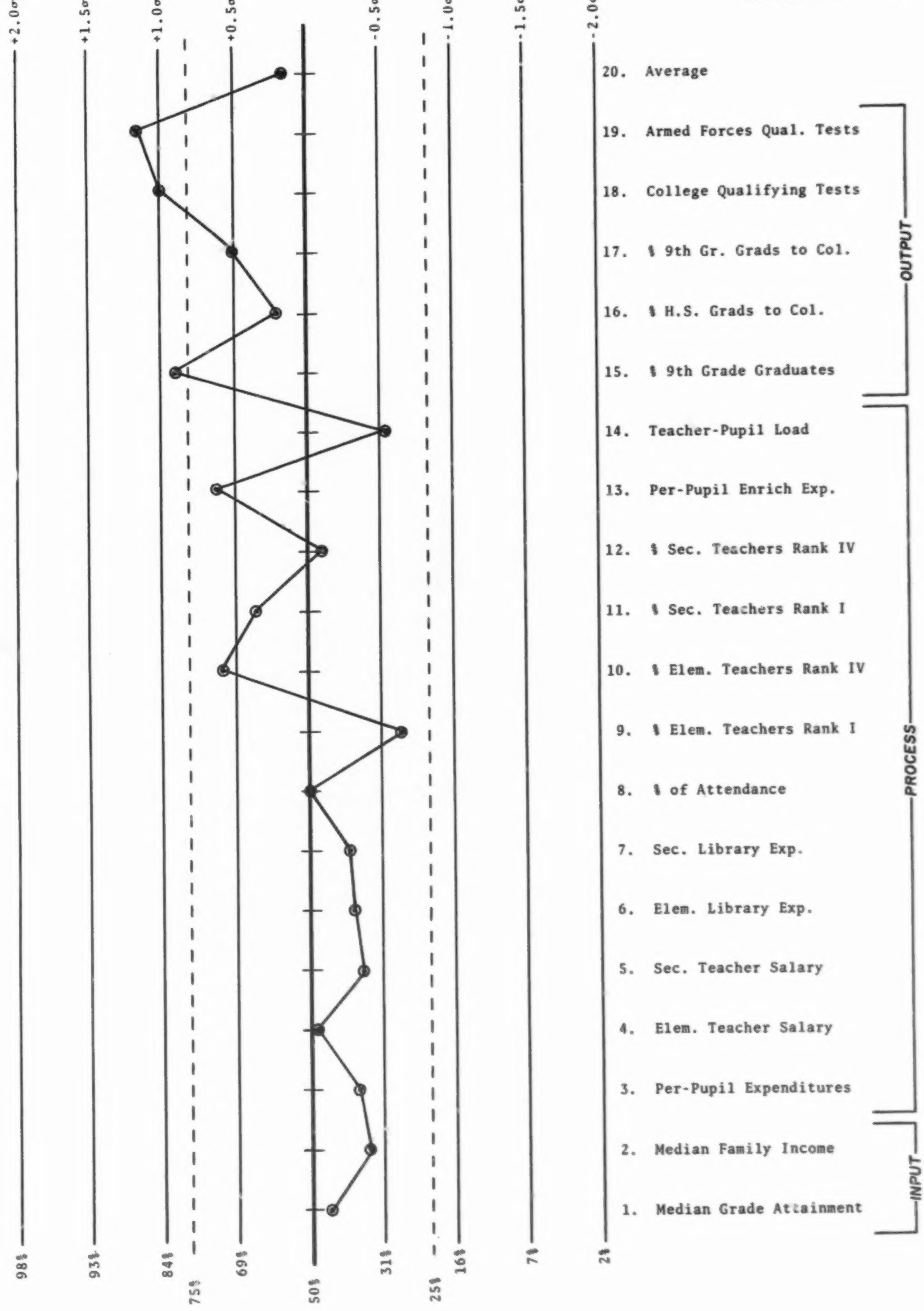
SHELBYVILLE IND.



SIMPSON CO.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8. % of Attendance
7. Sec. Library Exp.
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5. Sec. Teacher Salary
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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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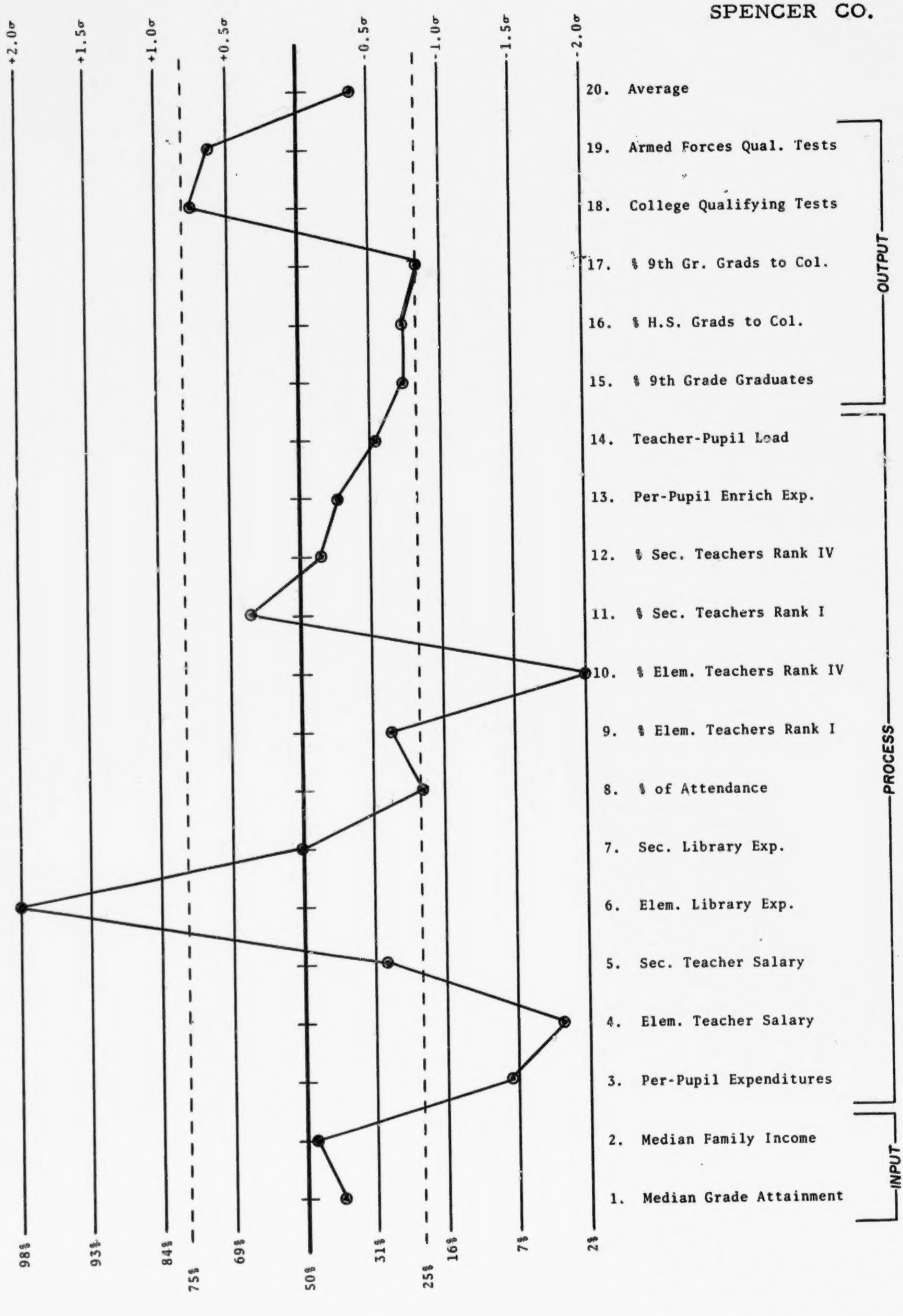
SPENCER CO.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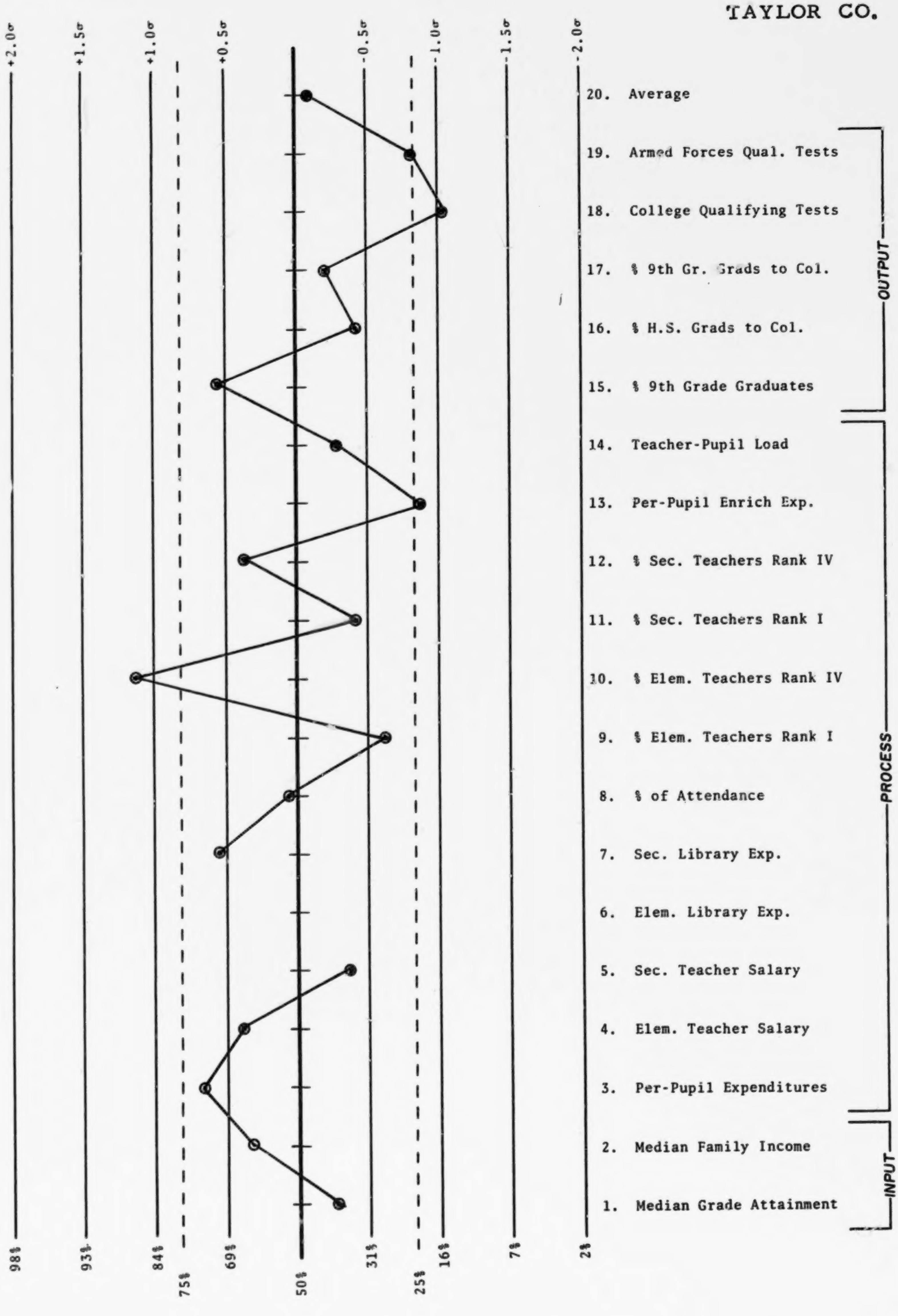
TAYLOR CO.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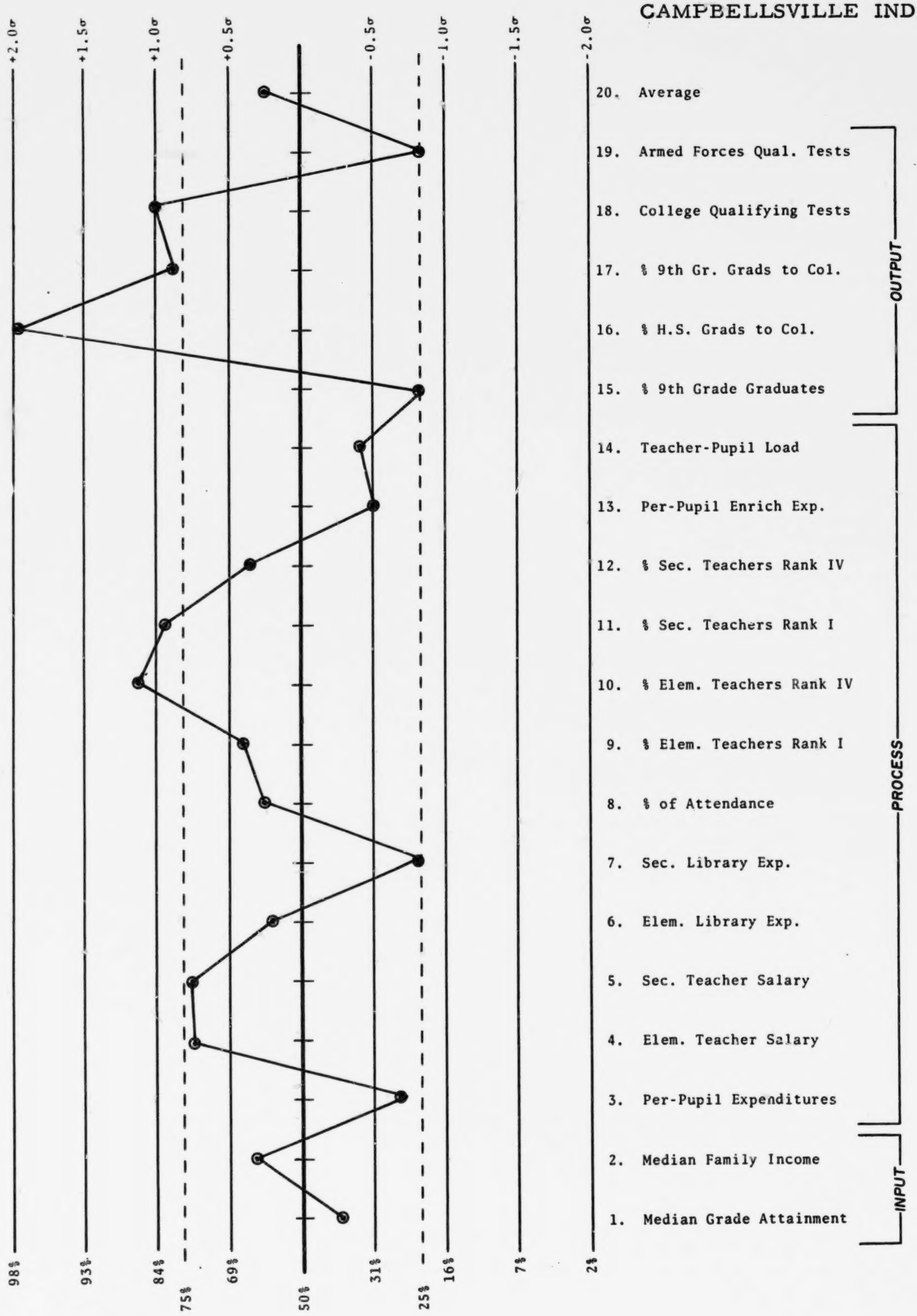
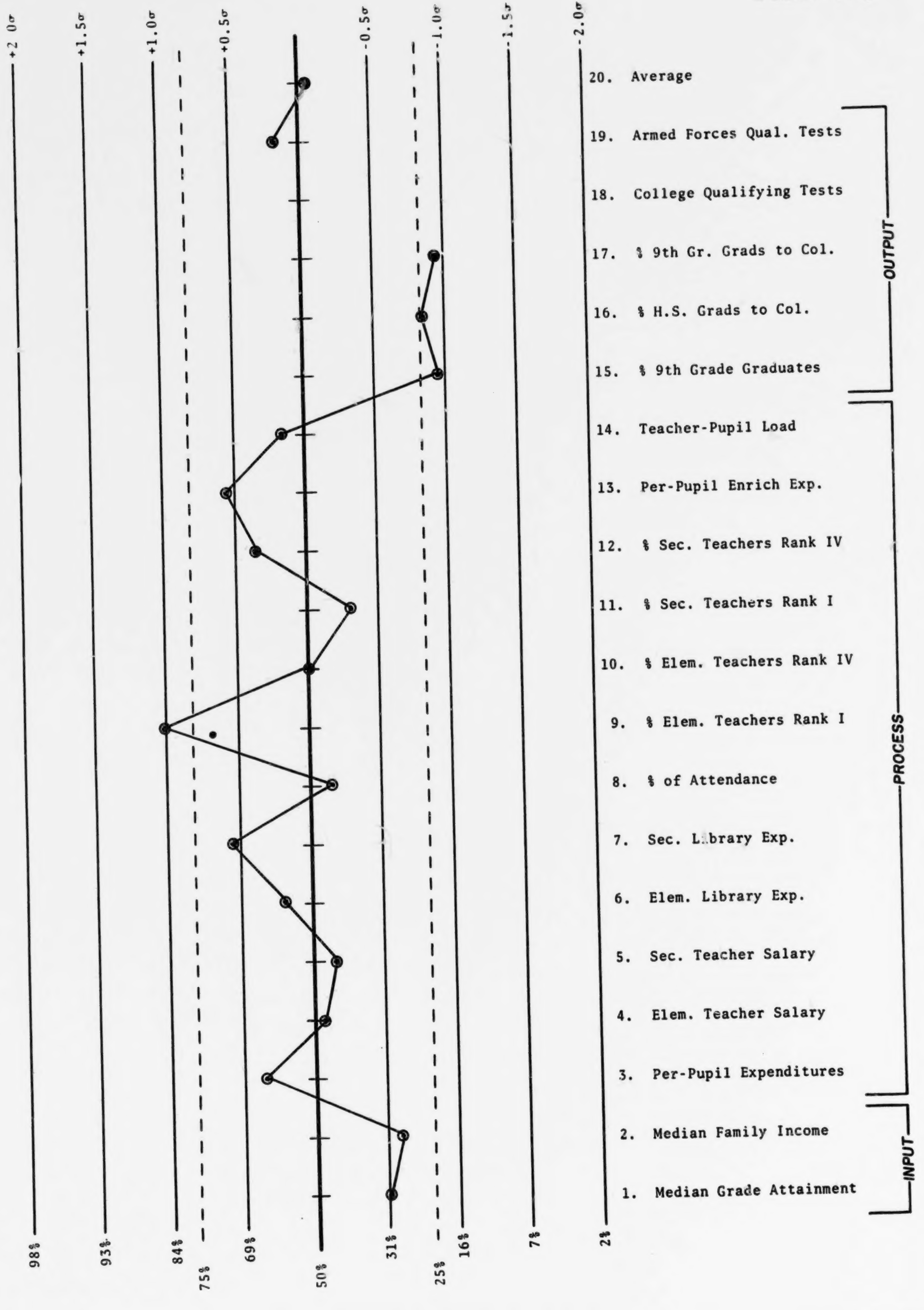
CAMPBELLSVILLE IND.



TODD CO.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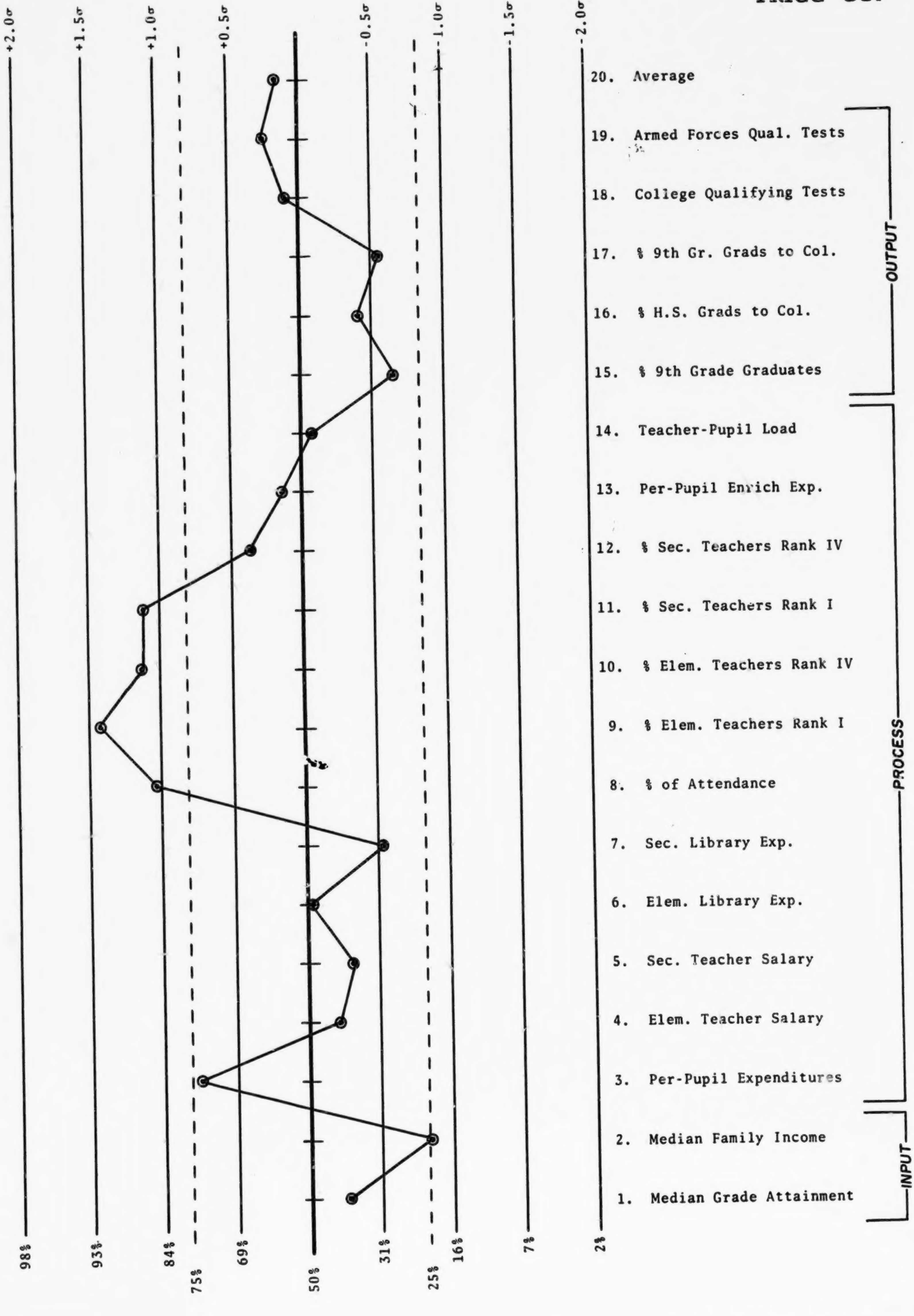
TRIGG CO.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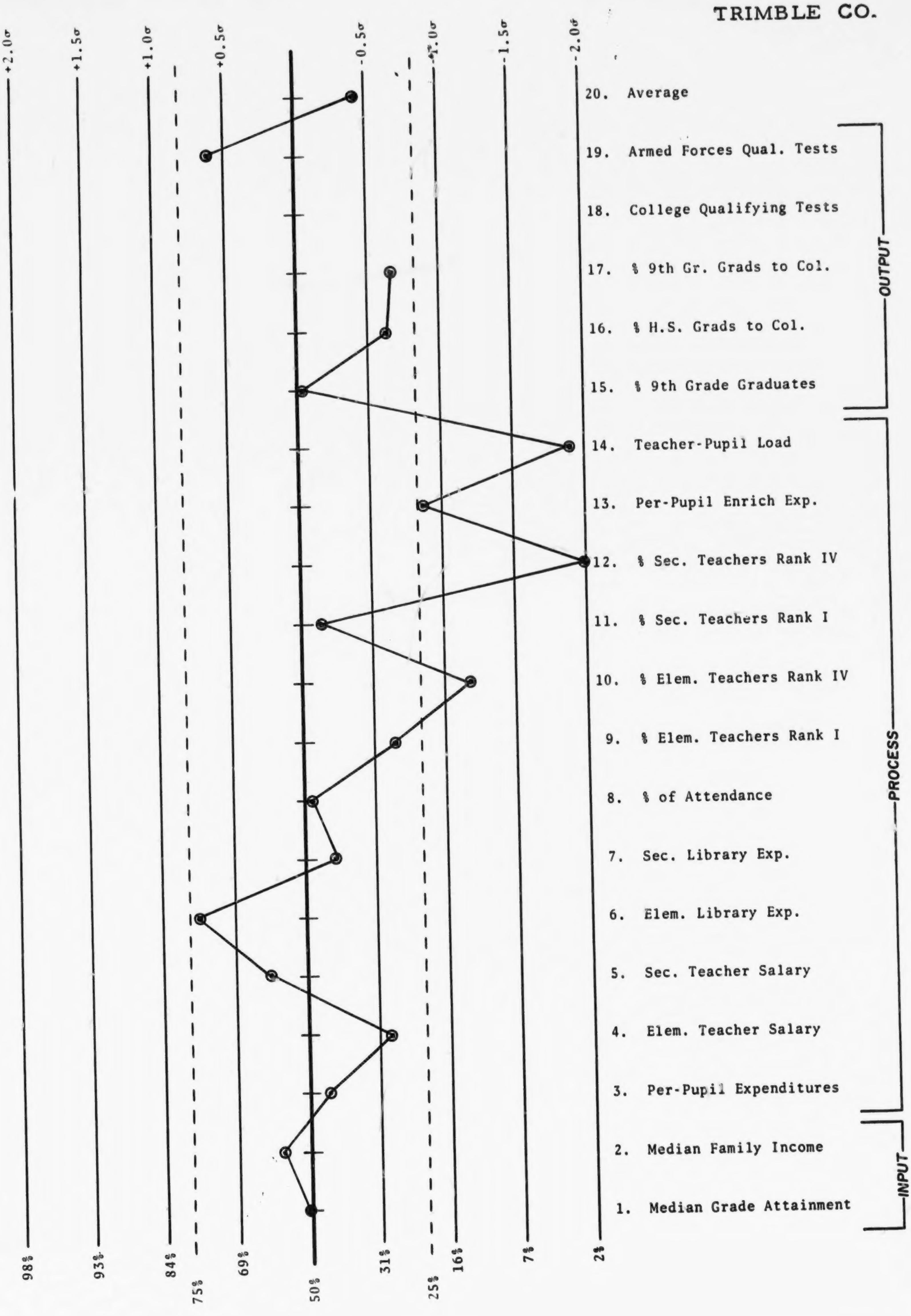
TRIMBLE CO.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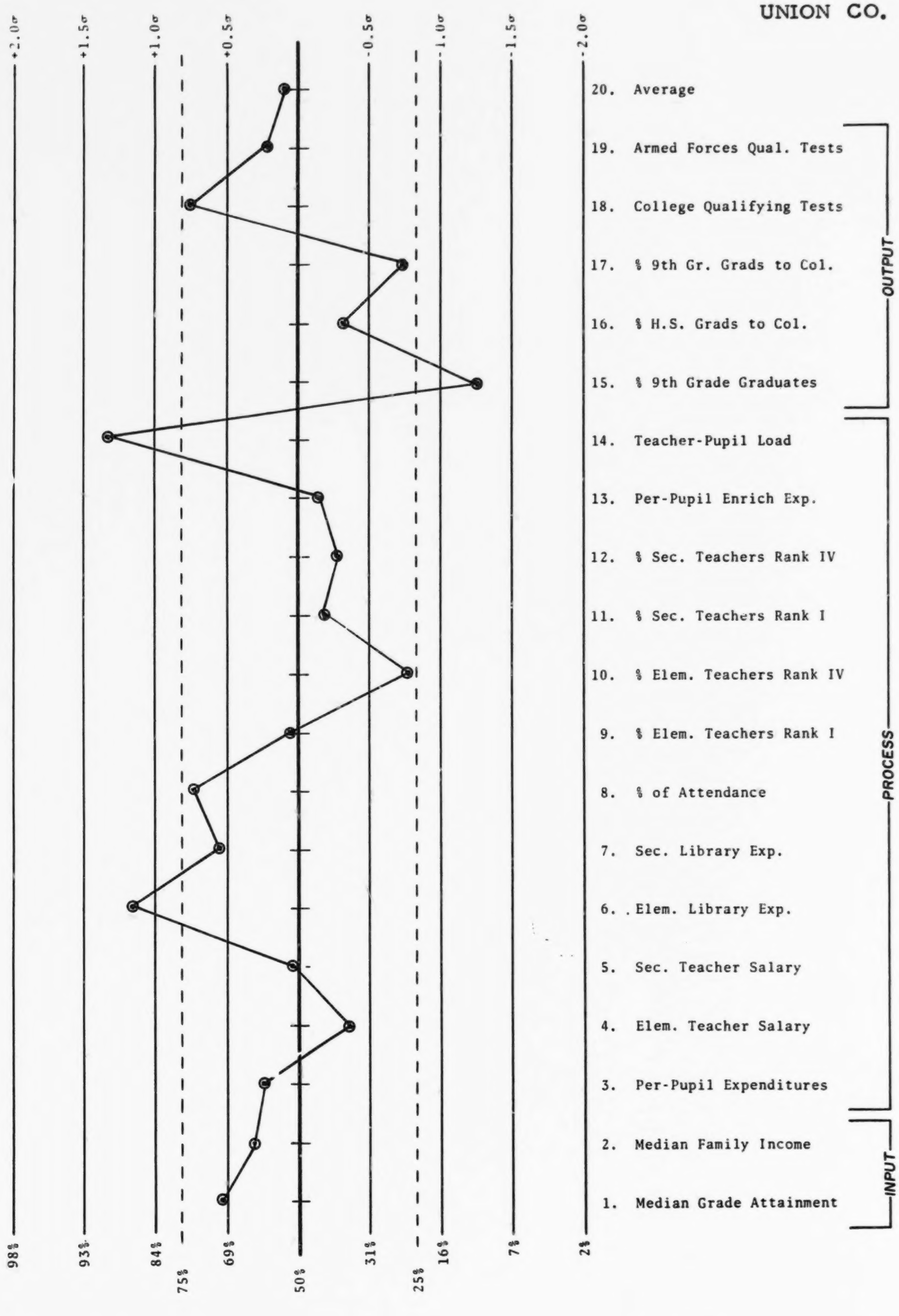
UNION CO.



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15. % 9th Grade Graduates
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1. Median Grade Attainment
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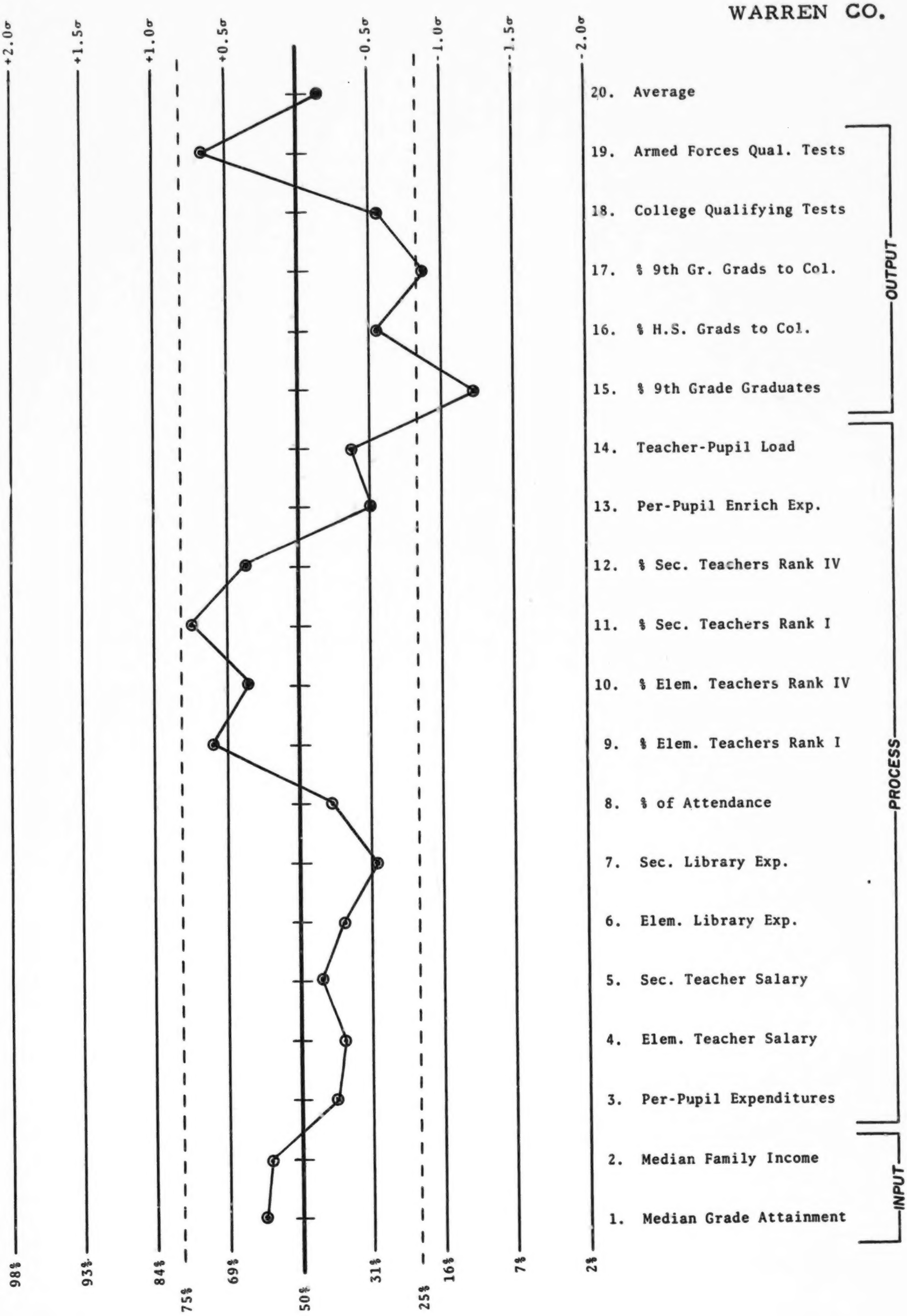
WARREN CO.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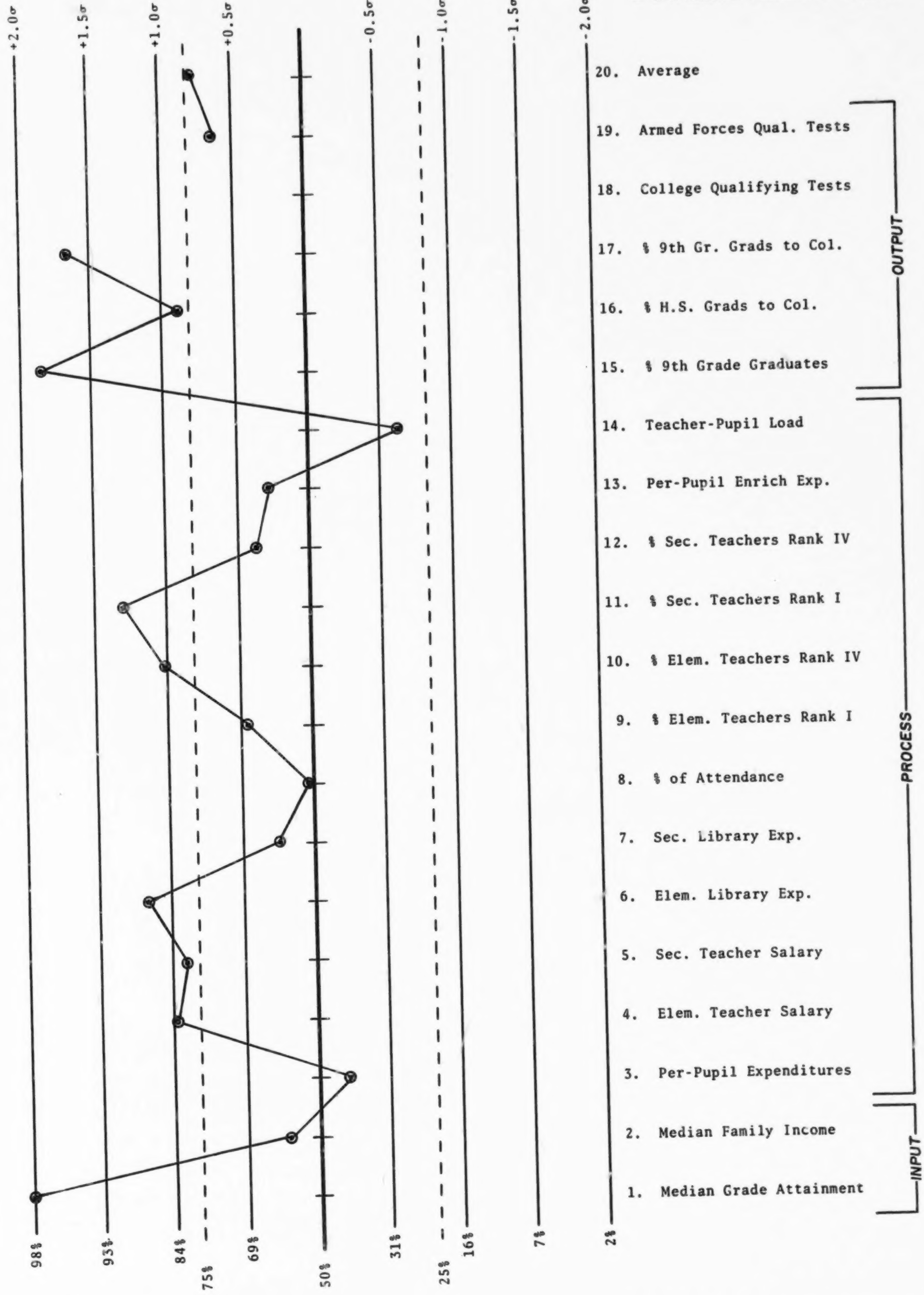
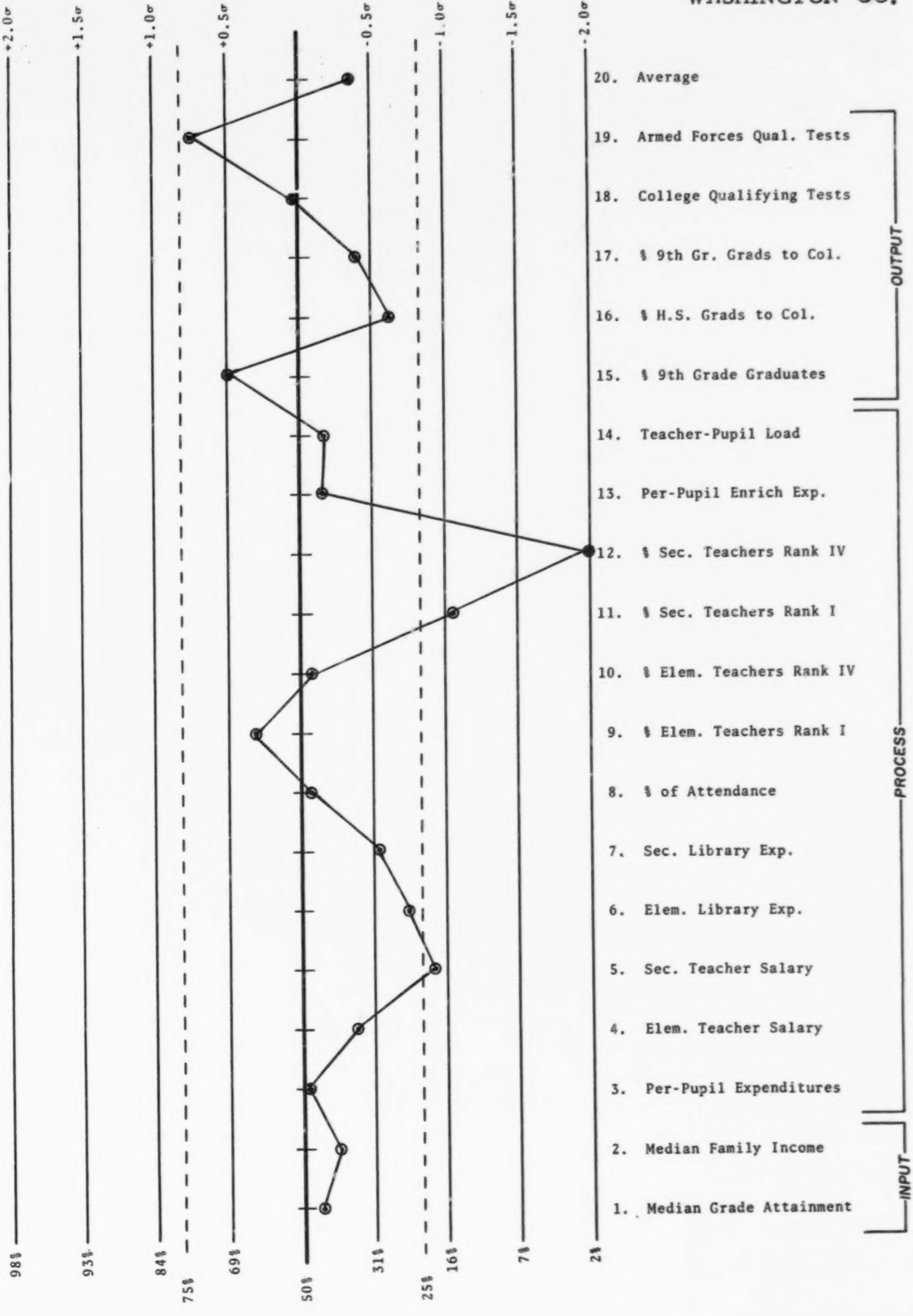
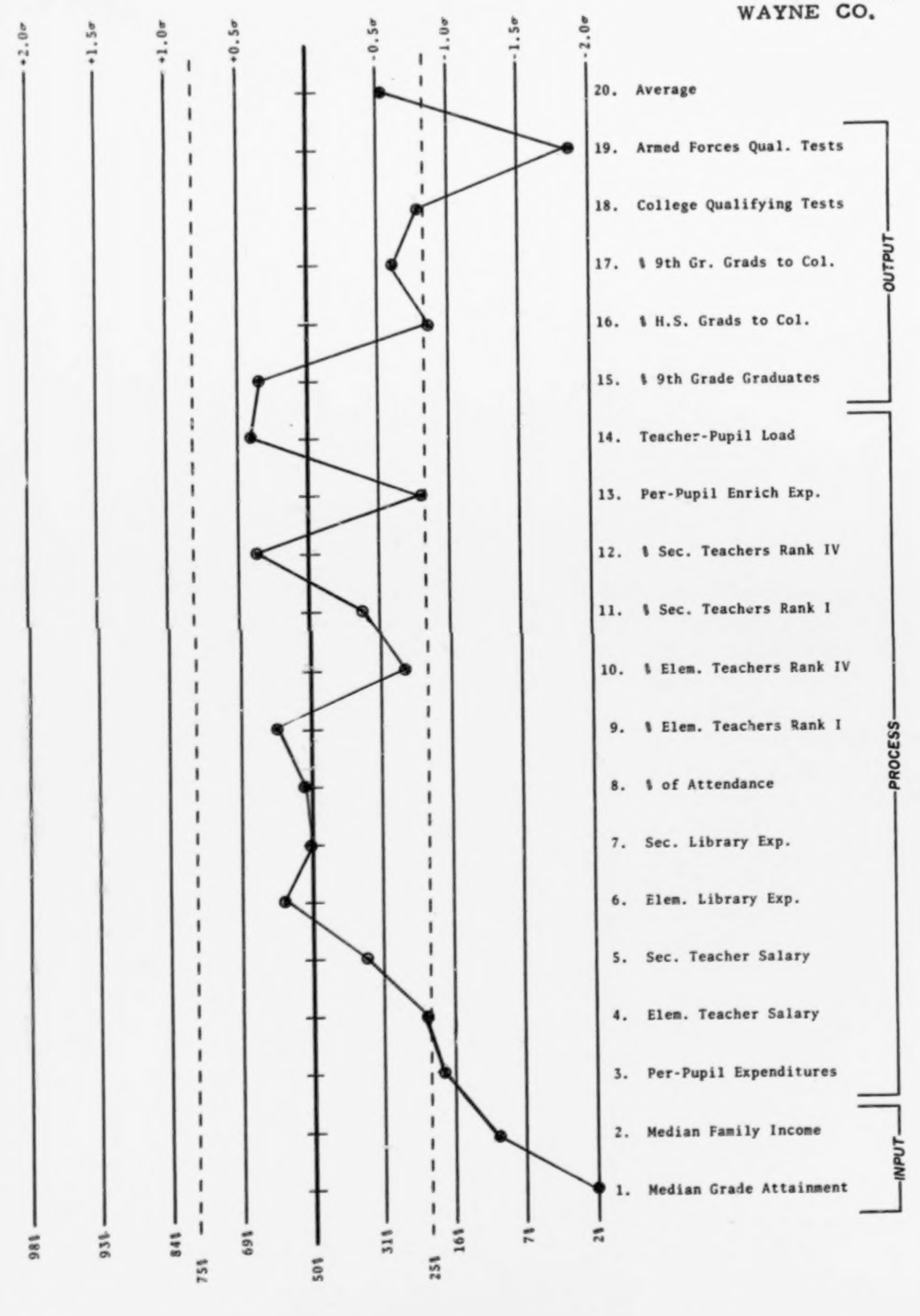
BOWLING GREEN IND.



WASHINGTON CO.



WAYNE CO.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14. Teacher-Pupil Load
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3. Per-Pupil Expenditures
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1. Median Grade Attainment
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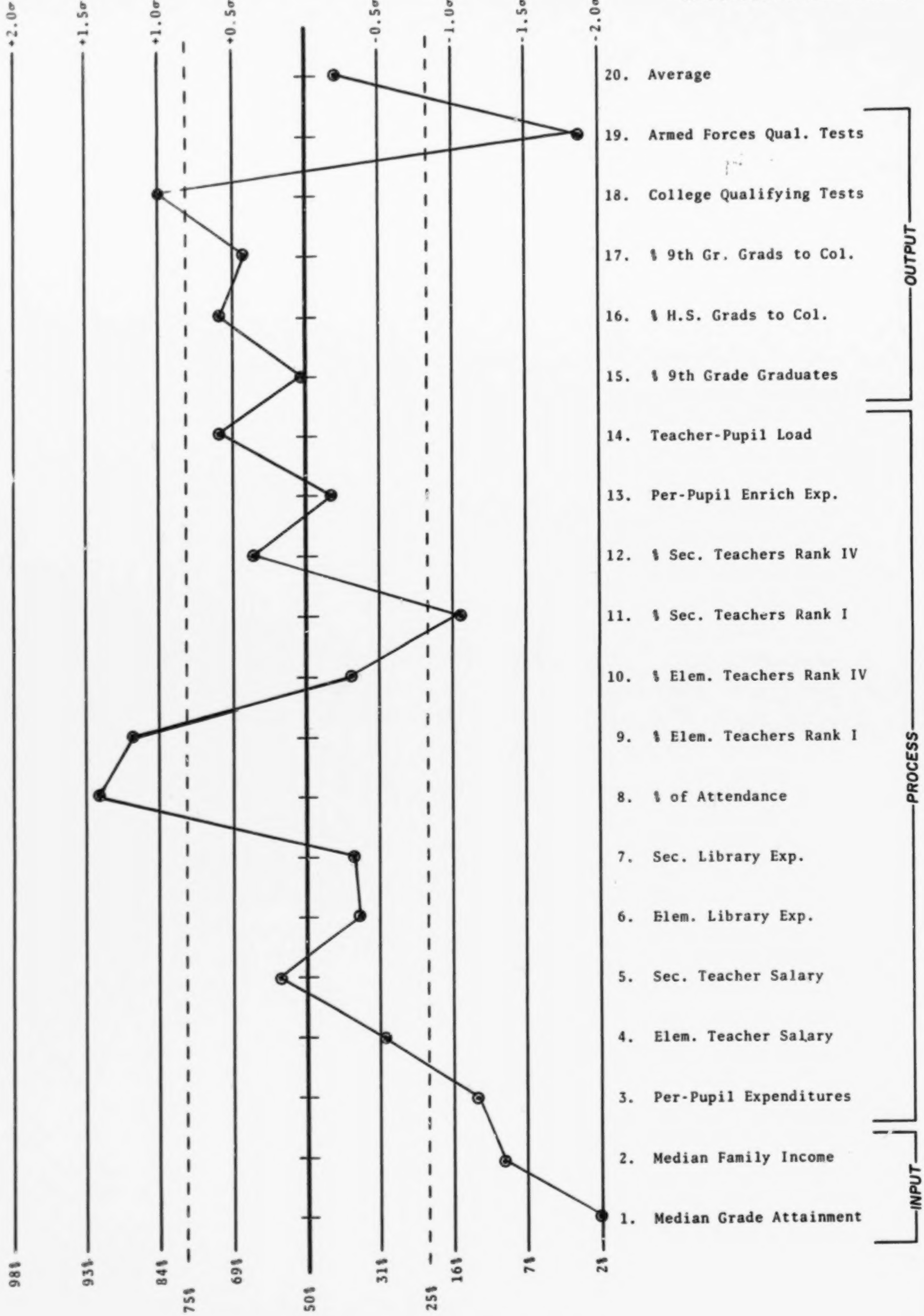
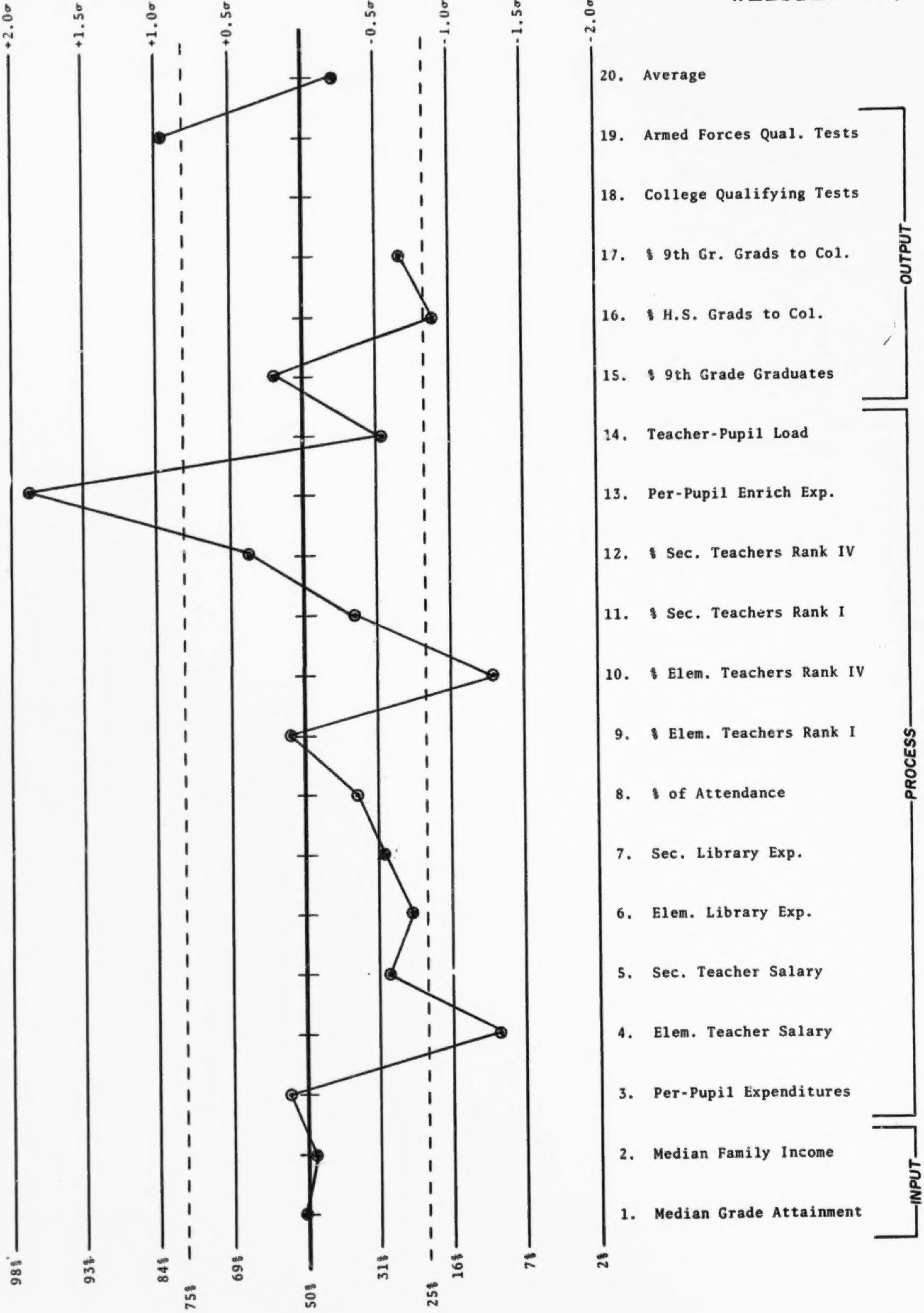
MONTICELLO IND.



WEBSTER CO.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1. Median Grade Attainment
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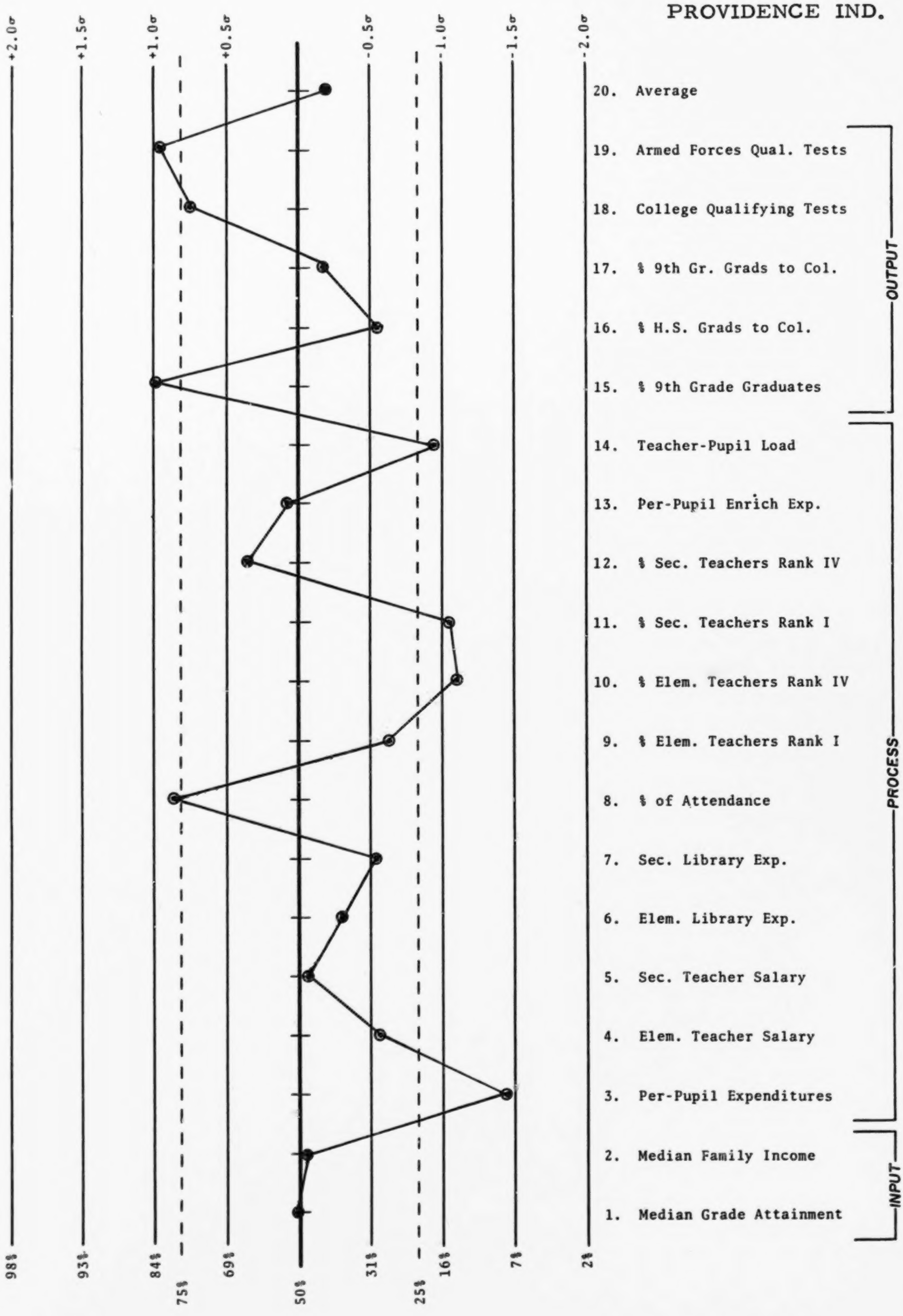
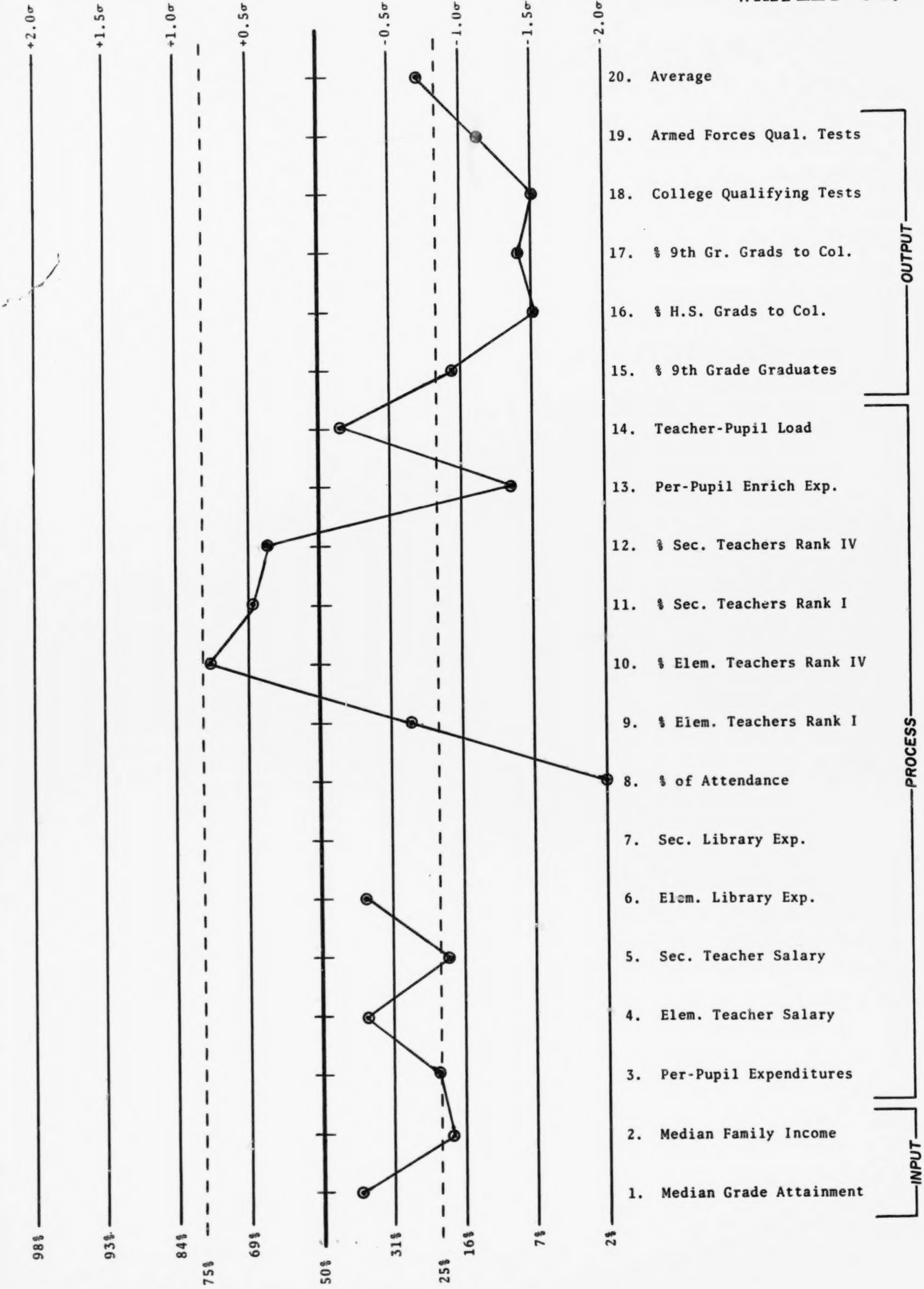
PROVIDENCE IND.



WHITLEY CO.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3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
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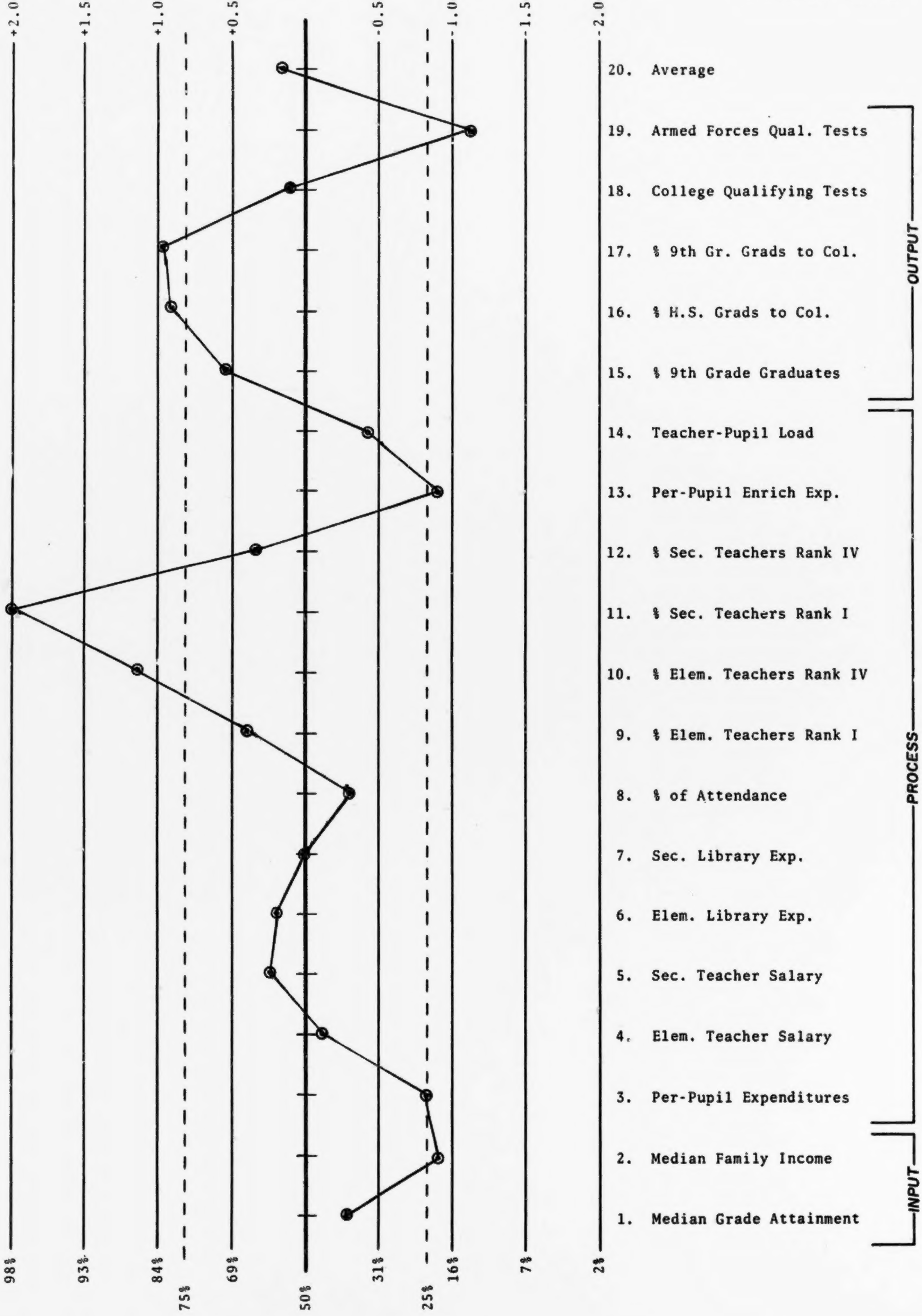
CORBIN IND.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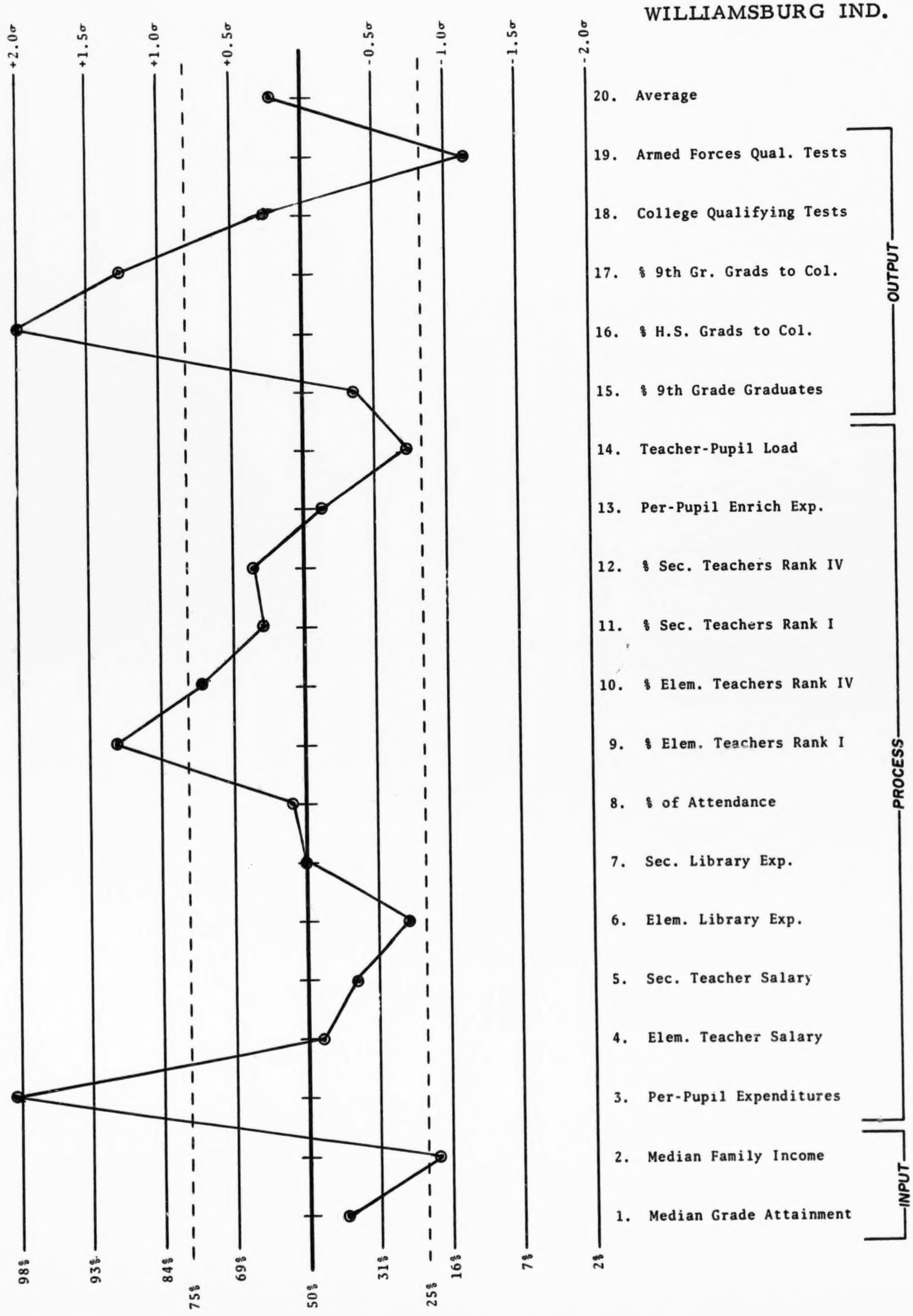
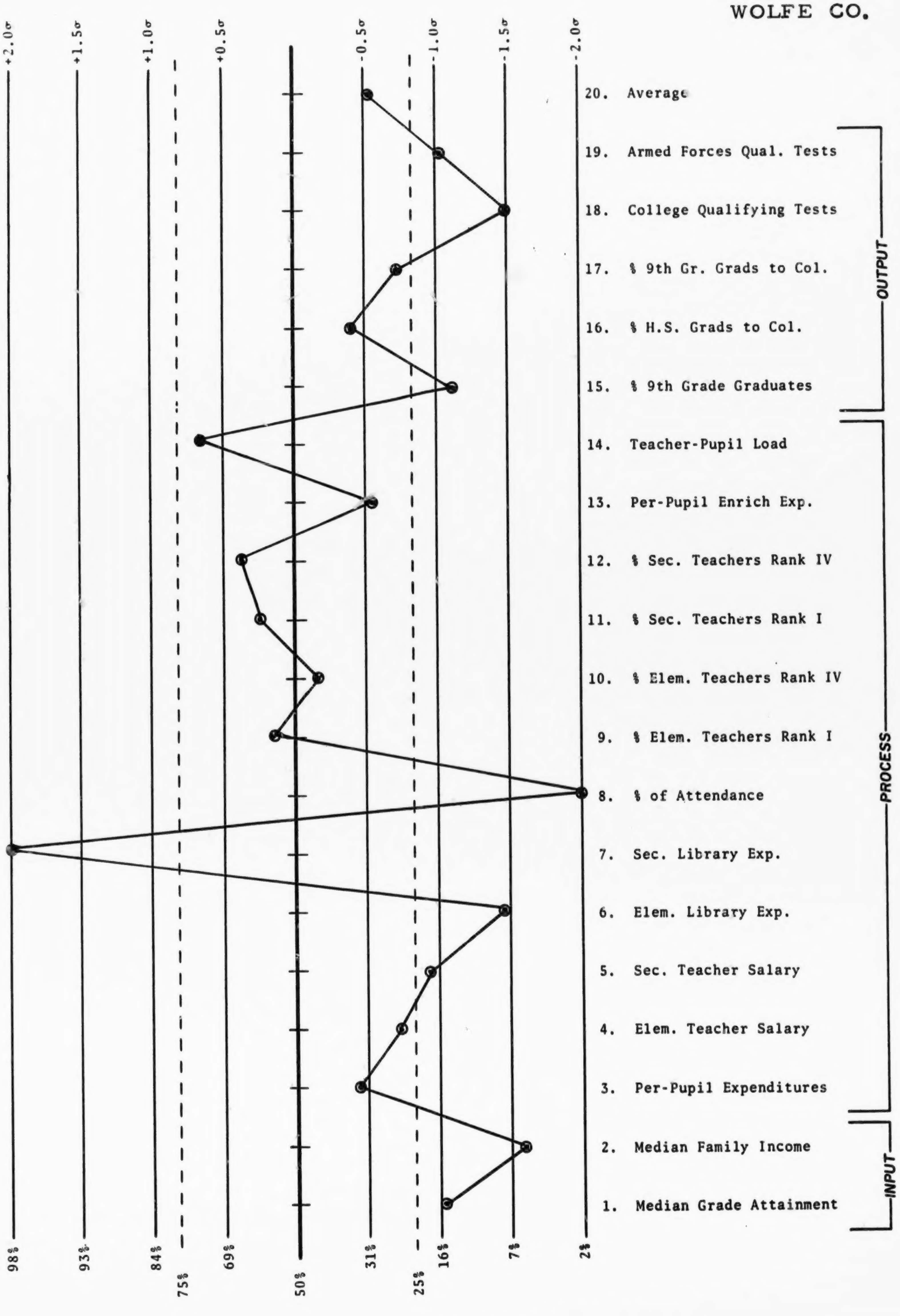
WILLIAMSBURG IND.



WOLFE CO.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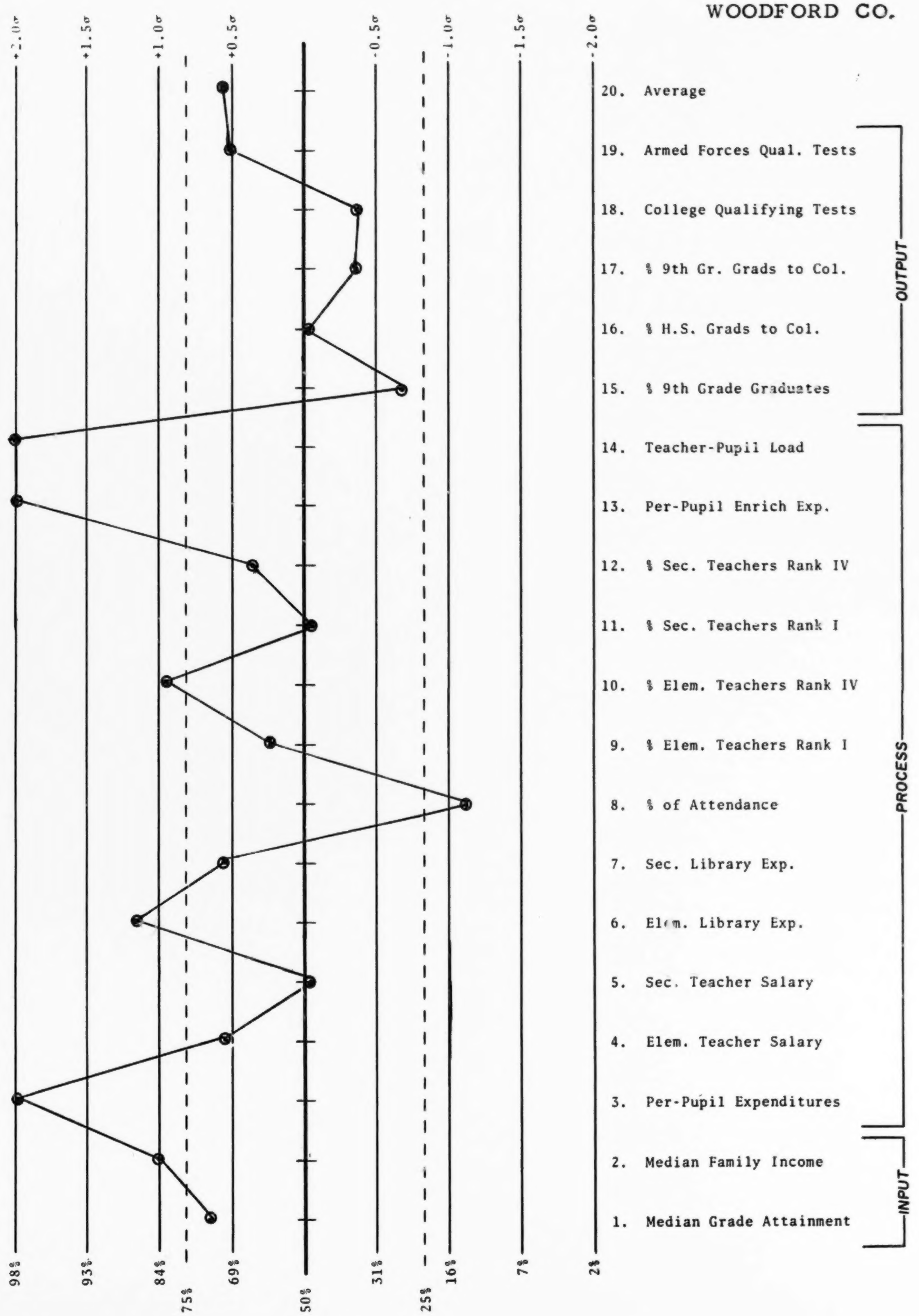
WOODFORD CO.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4. Elem. Teacher Salary
3. Per-Pupil Expenditures
2. Median Family Income
1. Median Grade Attainment
OUTPUT
PROCESS
INPUT
98%
93%
84%
75%
69%
50%
31%
25%
16%
7%
2%

APPENDIX A

Review of Related Kentucky Literature

The 1956-57 school year marked the first year of full implementation of the Minimum Foundation Program for financing education in Kentucky public schools. This legislative milestone prompted a series of studies concerned with the status and quality of education in the state. Interest was intensified when the Twenty-Fourth Annual Meeting of the Kentucky Association of Colleges, Secondary, and Elementary Schools, held at the University of Kentucky in October, 1959, adopted as its theme Quality Education Present and Future. College, secondary, and elementary educators in attendance concluded that an excellent staff, individualized programs, adequate facilities, and improved methods were essential for providing quality schools. The Conference, involving both professional and lay people, also recommended (1) changes in the organization of the State Department, (2) additional revenue for schools, and (3) better qualified teachers.

On February 11, 1960, the House of Representatives of the General Assembly created a special committee to study ways of strengthening the State Department of Education. This group, chaired by Harry M. Caudill of Hazard, recommended the following steps to upgrade education in Kentucky: (1) improvement of local school administration, (2) dismissal of inferior teachers, (3) revision of the Tenure Law and installation of a merit system, (4) wiser utilization of the State Department of Education, and (5) removel of politics from local school systems. The Committee pointed to the need for strengthening teacher education advised a shift from "soft" to "hard" subjects; and finally concluded that the ultimate criteria for judging the quality of a school system were its products; and that the greatest assurance for quality products were quality teachers.[2]

The managerial consultant firm of Booz, Allen, and Hamilton conducted a study of selected aspects of Kentucky public school education under the sponsorship of the Kentucky Commission of Public Education. Concentrating on the improvement of existing structures and services, this 1961 study recommended: (1) reorganization of the State Department of Education, (2) consolidation of schools, (3) improvement of school buildings, (4) more adequate pupil transportation. The consultant firm emphasized that its major purpose was to assist the Commission on Public Education and the public schools of Kentucky to achieve improved educational results with the funds available, pointing to the fact that the median educational level in Kentucky was well below the national average (8.2 as compared to 10.6) and that a well-trained work force was vital to attracting industry to the state. The study concluded that a sound economy, a well-educated population, the financing of education, and an improved system of public education are mutually interdependent.[3]

Closely following the above study, the Commission on Public Education appointed a Curriculum Study Committee to undertake an in-depth study of the elementary, junior high, and secondary curriculums of the state's schools. The 1961 Curriculum Study Committee consisted of six professors representing the arts and sciences, two professors of education, one sociology professor and three classroom teachers.[4] The expressed objective of this committee was to study the curriculum of the public schools of Kentucky, or "informally look at the way in which a child spends his day."[5] The group emphasized that its study was directed at assessing the general status of the curriculum in Kentucky's public schools and was not an attempt to evaluate individual teachers, schools, or school systems.

The Curriculum Study Committee studied curriculums and curricular practices, grades one through twelve, of some 273 schools which were visited by alternate teams of committee members. Several specific recommendations were made regarding: (1) curriculum content, (2) school reorganization, (3) teacher preparation, (4) consolidation, (5) transportation, and (6) buildings. While a general effort was made to observe and record evidences of superior teaching, good classroom organization, and curriculum; no assessment of system quality and no comparative ratings of school systems were attempted.[6]

The Commission on Public Education was created by the 1960 Kentucky General Assembly to provide for continuous study and evaluation of the Commonwealth's system of public education. It is composed of nine members appointed by the Governor, not more than four of whom could be educators, and all of whom should be persons known for their interest in and knowledge of the state's education system. The legislature directed that:

> The Committee shall study the problems and evaluate programs of public education within the Commonwealth. Such studies and evaluations shall include but not be limited to present policies concerning public school transportation, free textbook programs, school personnel, and public school physical plants. The Commission shall submit an annual report to the Governor and such special reports on its findings as the Governor may require.[7]

The Commission was authorized to employ a staff and was given an appropriation of $75,000 for each year of the 1960-62 biennium. Additional funds were made available from the Governor's Emergency Fund.

The Commission on Public Education has sponsored several studies, including the program Evaluation Study and the Curriculum Study, reviewed in this survey. In an evaluation of these studies, the Commission made some 28 recommendations running the gamut from reorganization of the State Department of Education to specific items such as length of school term, amount of library expenditures, ranking of teachers, and the like. The general findings of the Commission's Study were optimistic and pointed to the increased interest evidenced in education by the willingness of many districts to increase financial support to improve education, the improvement in teacher salaries, and a corresponding upgrading of teacher preparation in the State.[8]

A 1963 report of the Bureau of School Service entitled Where Does Your Community Stand[9] presents a comparison of Kentucky school districts in several areas related to financial support, income, expenditures, teacher preparation, holding power, and the educational level of the community. The data taken from various State Department of Education, U. S. Census, and National Education Association reports also permit some comparisons between Kentucky and other states and reveal the low rank position of Kentucky in: (1) teacher salaries, rank 45, (2) draft rejectees, rank 41 with 35.9 percent of registrants being rejected, (3) personal income, Kentucky ranked 46th and (4) ranked 31st with an 84.7 percent enrollment of school-age children.

This study, while assuming that money does not necessarily provide good schools, suggests that comparisons between districts that are somewhat similar in resources may be meaningful and significant. Certain basic conclusions emerged from the study. Among these were: (1) financial support for Kentucky schools is so far below the rest of the nation that fluctuations in price levels and cost of living could account for only a small part of the difference; (2) evidence exists that the general educational efficiency of the state is related to this low level of support; (3) Kentucky does make an effort roughly comparable to her economic position; many wealthier states do less proportionally; however, all those ranking below Kentucky in economic ability do more proportionally; and (4) the range of ability to support schools is wide among the several states and also among the various school districts of Kentucky.

The Bureau of School Service of the University of Kentucky devised a "Guide to the Evaluation of School Systems." This 1964 instrument provided a checklist and criteria for measuring the quality of schools and listed the following six essential areas for evaluation: (1) programs, (2) staff, (3) administration, (4) finances, (5) school plants, and (6) school transportation. Patterned somewhat along the lines of the Evaluative Criteria, the guide and checklists established a comprehensive set of measures for self-appraisal and planning for the district. The data provide schools using the instrument with an opportunity for projections and comparisons with Kentucky districts and national averages over a ten-year period, and subheadings under each major area list necessary components for measuring the quality of a school.[10] This effort by the Bureau of School Service was not a study, but was a service publication providing evaluative guidelines for Kentucky school districts.

The managerial consultant firm of Cresap, McCormick and Paget completed what is probably the best-known attempt to date to evaluate the quality of education in Kentucky. This 1964 study identified the ten highest and the ten lowest rated districts in the state, as judged by an expert panel consisting of 98 school superintendents, officials within the State Department of Education, and other educators in the state. (A year earlier this same firm, in a study of the administration and organization of the Kentucky State Department of Education, recommended that the department should channel its primary efforts each year toward assisting the local districts to improve their educational outputs.)[11]

Cresap, McCormick and Paget, while acknowledging the fact that quality education entails many diverse factors, utilized findings of previous research on quality education. Variables used were: (1) current expenditures, (2) teachers' salaries, (3) financial effort, (4) size of class, (5) teacher travel, (6) cost of education index, (7) age of staff, (8) school dropouts, (9) attendance, and (10) achievement test scores. Through comparisons of the ten highest and ten lowest districts in Kentucky, eight factors were selected and validated statistically for final inclusion in the evaluation system. These included: (1) annual current expenditures per average daily attendance, (2) average annual salaries, (3) percent supplemented by district for teacher salaries, (4) percentage of teachers holding master's degrees, (5) percentage of ninth graders completing high school, (6) attendance, (7) local financial index, and (8) cost per pupil for educational supplies and books.[12]

In validation of the selected factors, the study made comparisons of each factor among the districts selected as the highest and lowest. In 1962-63, annual current expenses per pupil averaged $276 while the figure for the ten lowest districts was $238. The better districts spent more per pupil than the state's average and all but one of the lower-rated districts were under the state average. The study concludes that this factor relates closely to the quality of education in the local districts of Kentucky.[13]

For "average annual salaries for teachers," factor two, the selected highest ten districts averaged $4, 975, while the state average was $4, 347. The average for the lower-rated districts was $3, 685. 50.

On the third factor of district supplement for teachers' salaries, which is closely related to factor two, the ten highest-rated districts in Kentucky ranged from a low of 16 percent to a high of 73 percent, with an average supplement of 33. 6 percent. For the ten lowest-rated districts, the supplement ranged from a low of 1 percent to a high of 8 percent, except for one district which had a supplement of 23 percent. The average supplement for the lower-rated districts was 6.9 percent. The study concludes that salaries and percentage of supplements by districts have real validity in identifying the highest and lowest-rated districts in Kentucky.[14]

In factor four--percentage of teachers holding a master's degree or higher--the selected higher rated districts averaged 33. 1 percent, while the state averaged 14 percent. For the lower-rated districts, the average was 9. 8 percent.[15] This factor at that time had some significance; however, due to the rapid improvement in teacher training and salaries it was becoming less useful for comparisons.

Factor five--the percentage of ninth graders completing high school (school holding power)--was also used to judge the quality of the district. The study acknowledged that other school and community factors played an important role in determining this factor--school holding power. The highest rated systems averaged 68. 7 percent with a range of 93.9 to a low of 56.6 percent. Some of the top-rated *districts had dropout rates higher than* the state average of 40. 0 percent, pointing to the fact that other variables are involved in this factor.

The range in attendance--factor six--was not great; however, other studies have indicated that low attendance is an indicator of poor school districts, and decreasing attendance leads to dropouts.[16] Attendance in the top-rated districts ranged from 96.55 to 91.55 percent, with an average of 94. 15 percent. (The state average attendance was 93. 28 percent.) The lowest districts ranged from 93.53 to 89.42, with an average of 91.33 percent. The study concluded that these differences had statistical significance at the time, but in the future this factor would lose its significance if attendance leveled off and became fairly uniform.[17]

Factor seven--effort index--refers to the percentage of local support divided by the tax rate of equated evaluation. The highest-rated districts averaged 0.94 per pupil in attendance, the state averaged 0. 80, and the lowest-rated districts averaged 0.41. This factor along with the tax rate equated by the Minimum Foundation Law computations, could be compared to decide which would be the most practical procedure to use for the state.[18]

The final factor--cost for supplies and books per pupil in average daily attendance (ADA)--compares the highest and lowest districts, finding a range from $3.42 to $14 per pupil for the top districts and from $0.71 to $6.22 for the lowest ones.[19] The state average was $3.77 per pupil.

In summary, the study outlined a plan of action consisting of: (1) an analysis of school districts of the state on the basis of the eight statewide statistical factors outlined above, to identify local districts that might be in need of special help in improving their educational systems; (2) a statewide achievement testing program, the data from which would be utilized to establish statewide norms and relate each district to these norms; and (3) a management audit of the educational and business management of those districts that had been identified as having special problems.

The Fantus Report (1965) created great interest and concern regarding the quality of school systems and education in Kentucky. This group was engaged by the Economic Development Commission to devise an industrial action program for the Commonwealth. Its findings included: (1) the dropout rate was too high, (2) guidance programs were weak, and (3) graduates of Kentucky high schools had problems in gaining admission to the more "prestigeous" colleges and universities. Citing the importance of good schools in attracting industry to an area, the Fantus Report singled out the schools of the western area of the state for special comment. This area had a higher retention rate than did the other two economic areas identified in the study, graduating six of every ten students in urban high schools and four of ten in the rural high schools. The western area also had a higher median grade attainment in the recruitable labor force with more than 50 percent having had ten or more years of schooling.[20]

Recommendations of the Fantus Report Study for improvement of the quality of Kentucky school districts included: (1) accreditation of all schools, (2) more honor and gifted programs, (3) more diversified curriculums in the area vocational schools, (4) consolidation of smaller districts with other districts and (5) improvement of guidance programs and counseling.[21]

In June, 1966, the Kentucky Superintendent of Public Instruction initiated a three-man study of the State Department of Education. This study was to complete a summary of the seven special studies which had been made on state school administration in the 1960-64 period and to recommend a concise blueprint for improvement with emphasis upon an immediate program of action.

The study procedures concluded the formulation of criteria for evaluating the state department; and for a series of interviews with staff members, department heads, district superintendents, and leaders of various professional organizations. A review of Kentucky school law, and school publications, and analyses of previous studies of the state department were also considered as integral aspects of the process or procedure.[22]

The report included 25 recommendations, among which were: (1) an expanded budget, (2) selection of the state superintendent of public instruction by a state board of education, (3) increased salaries for state department staff, (4) involvement in vital social issues such as Civil Rights, (5) assuming role in extending education downward to age four, (6) giving leadership to developing adult education, (7) developing an evaluative instrument for local school districts, (8) trying to better meet the needs of individual pupils, (9) continued research, and (10) improved in-service education.[23]

Conclusions From the Survey of Literature

The following conclusions have emerged from the survey of national and Kentucky literature pertaining to studies of quality education.

1. The majority of studies of quality education have concentrated upon an individual school or student approach and have dealt primarily with sample schools or school systems within a region or state. The literature surveyed in this study does not reveal any efforts at comprehensive state-wide assessments of school district quality.

2. A large number of factors related to quality education and school system quality have been identified by researchers and investigators. A total of 186 variables are listed in the 42 studies reviewed in the survey of the literature.

3. Quality education studies have emphasized three categories of factors: (1) those identified as community variables, (2) those identified as school system variables, and (3) those that are products or results of interrelationships between various community and school system variables. These factors are classified for this study as input, process, and output variables--a classification scheme also used by the Metropolitan School Study Council and the Institute of Administrative Research, Teachers College, Columbia University, New York City. This distinction has not always been clearly delineated due to the fact that under certain conditions various factors may be classified into one or more of the three categories.

4. An analysis of the literature on the basis of content and emphasis reveals the following subject matter concentration: (1) twenty studies deal with factors related to school staffs, programs and associated subjects, (2) fifteen studies focus upon financial factors and cost-quality relationships, and (3) seven studies concentrate on output factors. These three major areas of concentration include additional factors that can be identified as community, school system, or output variables.

   A breakdown by category of the total number of individual factors which appear in the various studies is revealed by the following data: 132 factors related to school program and staff, 73 to financial and cost-quality factors, 51 to output factors, 40 to community factors, 21 to legal and related aspects, and nine related to "adaptability."

5. The survey of related literature indicates holding power and student achievement are the variables most often used to measure output. Input variables considered the most reliable are median grade attainment of the adult population and median family income. Other variables in this category are size, type, and location of the community, wealth and public attitudes of support.

   A combination of school system ("process") variables have been used in quality education studies. The most reliable, according to the literature reviewed, are certain financial factors such as per-pupil expenditures, teacher salaries, enrichment expenditures* and local tax efforts. Among other school factors are staff training and experience, staff size, individual travel, size of the teacher's personal library, and place of birth and location of the institution where the teacher received his degree.

6. The review of literature discloses the interesting fact that a vast majority of major studies and research in quality education have used multiple regression analysis as the primary statistical method. The New York City Quality Education Measurement Project, the Pennsylvania Study, the California Study by James, and Project Talent reviewed in the larger study are examples of extensive and important studies of quality education in which regression analysis was utilized. Likewise, the Kentucky study is using the University of Kentucky Computer Center's Stepwise Multiregression Program in its assessment of quality education in 197 Kentucky public school districts. In addition, this study is using the 7040 and 360 model computers as well as the 1620 model.

7. In summary, the Kentucky study of quality education resembles some assessments of quality education in using similar variables; it differs, however, in emphasis and approach in the entire state school system.

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*These variables are used in the Kentucky quality study.

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